Study Guide

Department of Food Science and Technology

Argostoli, 2023

The **Department of Food Science and Technology** was established in 1999 resulting after the successive development of the Departments of Organic Agriculture, Organic Agriculture & Food Technology and Food Technology of the Ionian Islands Technological Educational Institute. In accordance with bill 4559 passed on 03/08/2018, the Department of Food Science and Technology has been a part of the Faculty of Environment of the Ionian University.

The new curriculum of the Department of Food Science and Technology started the academic year 2019-2020 with admissions from students who successfully passed the National system of Panhellenic entrance examinations.

The aim of the **Department of Food Science and Technology** is to offer its graduates the necessary knowledge and skills in a wide range of food science, including the fields of production, processing, safety and quality control, microbiology, toxicology, chemistry, analysis, technology and food biotechnology in order to be able to ensure a successful career path in the Food sector.

The main goal of the Department is the promotion of Food Science and Technology by focusing on theoretical knowledge and cutting-edge research technologies for the development and promotion of innovation in the methods of analysis, biotechnology, production, processing, safety, quality control and food management systems.

The duration of studies is four academic years (eight semesters).

The **Department of Food Science and Technology** is located in Argostoli, on Kefalonia island.

Argostoli, the capital of the island, is built amphitheatrically and is located in the eastern part of the homonymous peninsula. The highest part of the hill is covered by a beautiful pine tree forest and at the foot of the city is (formed) the bay of Argostoli. The main feature of the bay is the Venetian Bridge De Boset, which crosses it and connects the city with the villages on the other side and creates the lagoon of Koutavos, which is also an important wetland. This area of the lagoon, where the Department of Food Science and Technology is located directly opposite, has been adapted so that one can walk pleasantly on sidewalks and admire the beauty of nature and birds up close.

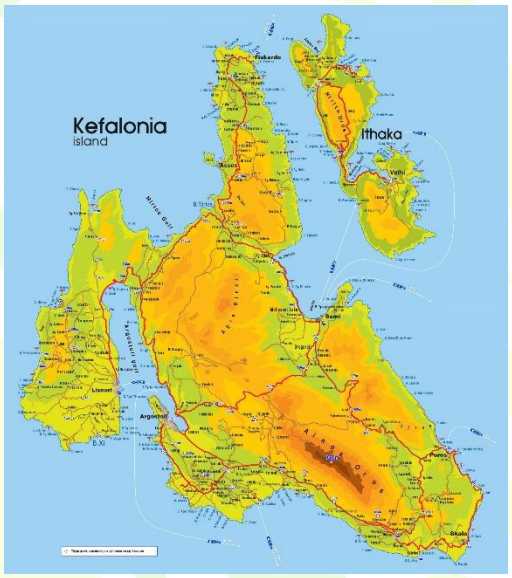
Argostoli is the capital city on the island and gathers the largest tourist traffic. It has a rich commercial activity and a good nightlife. It is a beautiful, clean and safe city, which combines the beauties and peace of an island but also the comforts and facilities of a well- organized city. There are plenty of shops selling home appliances, clothing and food. There are also available both furnished and unfurnished accommodations in a number capable of serving students. The existence of a large number of companies -tourist and non-tourist- gives the opportunity for employment to anyone who wishes to work.

In Argostoli today one can attend programs organized by the Municipality and be actively involved in Theater, music and visual arts. In the city there is a cinema hall housed in the "Kefalos" theater and a summer open-air cinema. There are several events, during summertime.

In the field of sports there is the possibility to engage in the facilities of the Municipality (center (includes soccer field, track, indoor gym, tennis courts, basketball, etc.), and the activity in tennis, basketball, baseball, soccer, soccer, soccer, basketball sailing, polo, kayaking, rowing, and gyms.

Access

By air: One can come to the island by plane from Athens, Thessaloniki, Zakynthos, Preveza and Corfu, while in the summer semester there are flights from other parts of Greece and abroad.



By boat: Access to the island is by boat from Patras to the port of Sami (about 40 minutes from Argostoli) and from the port of Kyllini to Poros (about 1 hour from Argostoli). In addition, there is a connection with Lefkada from the port of Fiskardo and Zakynthos from the port of Pessada.

The curriculum of the Department of Food Science and Technology lasts eight (8) academic semesters and includes thirty-seven (37) compulsory courses, four (4) elective courses [out of a total of ten (10) courses], dissertation and 2-month traineeship.

In order for a student to get the degree, the successful examination in forty-one (41) courses is required, as well as the elaboration of a final project (thesis) and a 2-month traineeship, which add up to a total of 240 Credits (P.M. or ECTS) (30 P. M. per semester)

For the calculation of the Degree grade, the traineeship is not considered as it is not evaluated with a grade.

The grade is calculated considering the following equation:

It is clarified:

The final project (thesis) corresponds to a total of 13 ECTS. The Grade of each Course, which is also conducted in a laboratory, is extracted by taking into account the following relation: Course Grade = (Course Theory Grade x 60%) + (Course Lab Grade x 40%).

$$\text{Degree Grade} = \frac{(grade_{\text{M1}} \times ECTS_{\text{M1}}) + (grade_{\text{M2}} \times ECTS_{\text{M2}}) + \cdots + (grade_{\text{M41}} \times ECTS_{\text{M41}}) + (grade_{\text{thesis}} \times ECTS_{\text{thesis}})}{\text{Sum ECTS (excluding traineeship ECTS)}}$$

The grading scale is the same that is followed in all University institutions in Greece. The degree grade follows the grading scale below with the appropriate markings:

Excellent: 8.50 – 10.00

Very good: 6.50 – 8.49

Good: 5.00 – 6.49

Minimum promotable grade: 5.00

In order to convert grades among foreign institutions, that have adopted the same ECTS scale, the following ECTS scale is built according to the following rule:

ECTS Grade	% of students achieving the grade	Definition
A	**10**	**EXCELLENT** outstanding performance with only minor errors
B	**25**	**Very Good** above the average standard but with some errors
C	**30**	**Good** Generally sound work but with a number of notable errors
D	**25**	**Satisfactory** Fair but with significant shortcomings
E	**10**	**Sufficient** Performance meets the minimum criteria
FX		**Fail** Some more work required before the credit can be awarded
F		**Fail** Considerable further work is required

1st SEMESTER

COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	101	MATHEMATICS	2		2	6		6	3
FST	102	BIOLOGY	3		3	9		9	5
FST	103	GENERAL AND INORGANIC CHEMISTRY	3	2	5	9	2	11	7
FST	104	INTRODUCTION TO FOOD SCIENCE AND TECHNOLOGY	2		2	6		6	3
FST	105	INFORMATICS APPLICATIONS	2	2	4	6	2	8	4
FST	106	ECONOMICS AND AGRIBUSINESS MANAGEMENT	3		3	9		9	5
FST	107	PHYSICS	2		2	6		6	3
TOTAL			**17**	**4**	**21**	**51**	**4**	**55**	**30**

2nd SEMESTER

COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	201	ORGANIC CHEMISTRY	3	2	5	9	2	11	7
FST	202	QUANTITATIVE CHEMICAL ANALYSIS	2	2	4	6	2	8	5
FST	203	STATISTICS APPLICATIONS	3		3	9		9	6
FST	204	GENERAL MICROBIOLOGY	2	3	5	6	3	9	6
FST	205	NUTRITION	3		3	9		9	6
TOTAL			**13**	**7**	**20**	**39**	**7**	**46**	**30**

3rd SEMESTER

COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	301	FOOD BIOCHEMISTRY	2	2	4	6	2	8	6
FST	302	FOOD PROCESSING I	2	3	5	6	3	9	6
FST	303	FOOD ANALYSIS	2	2	4	6	2	8	6
FST	304	FOOD MICROBIOLOGY	2	3	5	6	3	9	6
FST	305	FOOD MARKETING	3		3	9		9	6
TOTAL			**11**	**10**	**21**	**33**	**10**	**43**	**30**

4th SEMESTER

COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	401	FOOD ENGINEERING	2	2	4	6	2	8	6
FST	402	FOOD CHEMISTRY	2	2	4	6	2	8	6
FST	403	FOOD BIOTECHNOLOGY	2	2	4	6	2	8	6
FST	404	FOOD PROCESSING II	2	3	5	6	3	9	6
FST	405	PRINCIPLES OF CROP PRODUCTION	3		3	9		9	6
TOTAL			**11**	**9**	**20**	**33**	**9**	**42**	**30**

5th SEMESTER

COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	501	FRUITS AND VEGETABLES SCIENCE AND TECHNOLOGY	2	2	4	6	2	8	6
FST	502	FAT AND OILS SCIENCE AND TECHNOLOGY	2	2	4	6	2	8	6
FST	503	MILK AND MILK PRODUCTS SCIENCE AND TECHNOLOGY	2	2	4	6	2	8	6
FST	504	INDUSTRIAL FERMENTATIONS	2	2	4	6	2	8	6
FST	911	* ENGLISH TERMINOLOGY	3		3	9		9	6
FST	912	* VALORIZATION OF FOOD INDUSTRY BY-PRODUCTS							
FST	913	* FOOD HYGIENE							
TOTAL			**11**	**8**	**19**	**33**	**8**	**41**	**30**

*CHOOSE ONE (1) OF THE FST 911, FST 912, FST 913

6th SEMESTER									
COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	601	INSTRUMENTAL FOOD ANALYSIS	2	2	4	6	2	8	5
FST	602	PRINCIPLES OF ORGANIC FOOD PRODUCTION	3	2	5	9	2	11	7
FST	603	CEREALS AND CEREAL PRODUCTS SCIENCE AND TECHNOLOGY	2	2	4	6	2	8	6
FST	604	VITICULTURE AND VINE PRODUCTS	2	2	4	6	2	8	6
FST	921	* FOOD ADDITIVES AND SWEETENERS	3		3	9		9	6
FST	922	* ENZYMOLOGY							
FST	923	* FUNCTIONAL FOODS							
TOTAL			12	8	20	36	8	44	30
*CHOOSE ONE (1) OF THE FST 921, FST 922, FST 923									

7th SEMESTER									
COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	701	FOOD TOXICOLOGY	2	2	4	6	2	8	5
FST	702	MEAT AND FISH PRODUCTS SCIENCE AND TECHNOLOGY	2	3	5	6	3	9	5
FST	703	WINE AND ALCOHOLIC BEVERAGES SCIENCE AND TECHNOLOGY	2	2	4	6	2	8	5
FST	704	QUALITY ASSURANCE AND LEGISLATION	3		3	9		9	5
FST	931	** SENIOR SEMINAR	6		6	18		18	10
FST	932	** BIOREFINERIES DEVELOPMENT							
FST	933	** FOOD QUALITY CONTROL AND SENSORY EVALUATION							
FST	934	** SPECIAL TOPICS IN FOOD SCIENCE AND TECHNOLOGY							
TOTAL			15	7	22	45	7	52	30
**CHOOSE TWO (2) OF THE FST 931, FST 932, FST 933, FST 934									

8th SEMESTER									
COURSES			HOURS			WORKLOAD			ECTS
			LECTURE	LABORATORY	TOTAL	LECTURE	LABORATORY	TOTAL	
FST	801	SOIL MANAGEMENT AND FOOD QUALITY	2	2	4	6	2	8	5
FST	802	FOOD PRODUCT DEVELOPMENT	2	2	4	6	2	8	5
FST	803	FOOD PACKAGING	2	2	4	6	2	8	5
ΠΤΥΧ		FINAL PROJECT	4	9	13	12	9	21	13
ΠΡΑΚΤ		TRAINEESHIP	1	1	2	3	1	4	2
TOTAL			11	16	27	33	16	49	30

Course outlines

A detailed outline is following for each of the courses of the curriculum above.
The outlines are giving in detail all the information related to the course (semester, hours and method of teaching, type of course, teaching units, workload, assessment method, recommended bibliography, etc.). The objectives, learning outcomes and the content of the course are analyzed and statistics are also presented regarding the performance of the students per course for the last two years. Curriculum courses that have not yet been taught are not accompanied by performance statistics.

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST101**	**SEMESTER**	1
COURSE TITLE	**MATHEMATICS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Total	2	3
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*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- solve problems, of mathematical content, that he will encounter during his studies
- develop critical thinking to analyze problems and create an algorithm to solve it
- synthesize the data provided by the parameters of the problem and apply their mathematical knowledge to give each case the more appropriate mathematical solution

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 *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Criticism and self-criticism* *Production of free, creative and inductive thinking* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Review of basic mathematical techniques. Applications of analogy relations in a biology laboratory. Description of relationships with equations and graphs. Introduction to descriptive statistics. Biotechnology applications. The theory and practice governing the basic protocols, which are carried out daily in laboratories of molecular biology, biochemistry, biomedicine and biotechnology, are examined in detail. All standard laboratory operations, from solution preparation and pH measurement to specialized reactions such as Bradford and PCR.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	78
Total contact hours and training	***78***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	Evaluation procedure performed in Greek. Written Evaluation

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.*	

BIBLIOGRAPHY

- Suggested bibliography:

1. *BOOK [59395586]: Μαθηματικά μοντέλα στη Βιολογία 2η έκδοση, Σγαρδέλης Στέφανος*
2. *BOOK [13570]: SCHAUM'S ΔΙΑΦΟΡΙΚΟΣ ΚΑΙ ΟΛΟΚΛΗΡΩΤΙΚΟΣ ΛΟΓΙΣΜΟΣ, FRANK AYRES JR., ELLIOT MENDELSON*
3. *BOOK [68403105]: Εφαρμοσμένη Ανάλυση και Στοιχεία Γραμμικής Αλγεβρας, Φιλιππάκης Μ.*
4. *BOOK [31107]: Απειροστικός λογισμός και πραγματική άλγεβρα, Σακκαλής Παναγιώτης Γ.*

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
MATHEMATICS			
10	50	24%	24%
9	44	21%	46%
8	25	12%	58%
7	22	11%	68%
6	65	32%	100%
	206	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST102**	**SEMESTER**	1
COURSE TITLE	**BIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	5
Total	3	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 aim of Biology course is for students to develop an understanding of the basic concepts of living organisms such as interdependence of organisms, the molecular and cellular basis of certain characteristics, energy transfer in organisms and cell growth and heredity.

Upon successful completion of the course students will have knowledge to:

- identify and classify micro-organisms
- describe the metabolism of micro-organisms
- define the relationship between genetics and heredity
- explain the morphology and function of animals and plants
- develop the necessary background to understand the content of relevant courses in subsequent semesters

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Respect for the natural environment
- Production of free, creative and inductive thinking

SYLLABUS

- The chemistry of life
  - Chemical compounds in living organisms
  - Water and environment
  - Carbon and the molecular diversity of life
  - Structure and function of large biological molecules
- The cell
  - Cell structure & function
  - Cell membrane structure & function
  - Metabolism
  - Cellular respiration - energy
  - Photosynthesis
  - Cell-cell communication
  - Cell cycle
- Genetics
  - Gene
  - Inheritance - chromosomes
  - From gene to protein
  - Regulation of gene expression
- Evolution
  - Biological populations' evolution
  - Bacteria and Archaea
  - Protists
  - Fungi
  - Viruses
- Plant and animal structure and function
  Ecology

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing
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.*	**Language of evaluation: Greek** **Final written examination in theory and in laboratory that includes:** Midterm and final exams (fill-in the blanks questions, short answer questions, multiple choice questions)

Activity	*Semester workload*
Lectures	117
Total contact hours and training	***117***

ATTACHED BIBLIOGRAPHY

1. CAMPBELL N., REECE J., Biology
2. Alberts B.,Bray D.,Hopkin K.,Johnson A.,Lewis J.,Raff M.,Roberts K.,Walter P. Molecular Biology of the Cell

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
BIOLOGY (1st time on 2020-21)			
10	11	13%	13%
9	7	9%	22%
8	16	20%	41%
7	13	16%	57%
6	35	43%	100%
	82	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST103**	**SEMESTER**	**1**
COURSE TITLE	**GENERAL AND INORGANIC CHEMISTRY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Laboratory experiments	2	
Total	5	7
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*	General background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 succesful completion of the course the student will be able to:

- Define the fundamental principles of Chemistry
- Identify and apply the elementary rules and processes in a chemical laboratory
- Acknowledge and use essential apparatus and instruments in a chemical laboratory
- Analyse and interpret experimental measurements to produce reliable results

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*	*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*

Decision-making *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Criticism and self-criticism* *Production of free, creative and inductive thinking* *.....* *Others...* *.....*

- Adapting to new situations
- Data collection and analysis
- Critical thinking
- Decision-making
- Working independently
- Team work

SYLLABUS

Atomic structure, atomic and mass numbers, isotopes, chemical bonds, molecules, ionic and molecular bonds, dipole moment. Intermolecular forces. Complex compounds. Chemical formulas, the concept of mole. Solutions, colloids, solubility, ways of expressing the concentration of solutions. Solubility product. Naming inorganic compounds. Chemical reactions and chemical equations, stoichiometry.

Electrolyte dimensioning and ionization, acids, bases, salts, pH / pOH, indicators, neutralization reactions, acid-base titrations. Hydrolysis of salts. Buffers. Common ion effect.

Reaction rate, chemical equilibrium, Le Chatelieur principle.

Redox reactions.

Radioisotopes.

Spectrophotometry.

Typical lab experiments

- Introduction - Lab safety rules - Lab apparatus
- Lab balance - Weighing
- Solution preparation - Solution dilution - Solution mixing
- pH - Indicators
- Buffers - Determination Ka for a weak acid
- Acidimetry - Alkalimetry
- Preparation and titration of standard solutions of acids and bases
- Heterogeneous equilibrium – Solubility product
- Qualitative analysis of anions and cations
- Spectrophotometry

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of information technologies in data collection, teaching and communication. Communication with students via e-mail, eClass, Viber.
TEACHING METHODS	

Activity	*Semester workload*
Lectures	117 hours

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*		
	Laboratory experiments	26 hours
	Total contact hours and training	**143 hours**
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.*	• Language of assessment: Greek • Evaluation methods - Midterm exam - Final exam	

BIBLIOGRAPHY

- D. Ebbing, S. Gammon, General Chemistry
- D. A. Skoog, D. M. West, F. James Holler, S. R. Crouch, Fundamentals of Analytical Chemistry

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
INORGANIC CHEMISTRY			
10	13	8%	8%
9	12	8%	16%
8	26	17%	33%
7	33	22%	55%
6	69	45%	100%
	153	100%	

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURCE UNIT CODE	**FST104**	**SEMESTER**	**1**
COURCE TITLE	**Introduction to Food Science and Technology**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	2	3
Tutoring	---	
Laboratory		
Total	**2**	**3**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	Background knowledge General Knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*

- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

After completing this course, students will have:

- Familiarized themselves with and comprehended concepts related to Food Science and Technology
- Learned the general principles that govern Food Science and Technology
- Comprehended the origin, composition, and nutrients of food and the nutritional value of distinct categories of food
- Learned the basic principles of food processing and preservation
- Familiarized themselves with packaging form, the role of additives, comprehended the basic rules of hygiene and safety in production plants, and the rules of transport and storage
- Exposed themselves to issues related to global food demand, available food supply, and contemporary problems of food sufficiency and quality

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)
…….

- Researching, analyzing, and synthesizing data and information with the use of suitable technologies
- Working autonomously
- Promoting free, creative, and deductive reasoning

COURSE CONTENT

1. Definitions and general concepts in Food Science and Technology. The food industry.
2. Composition, nutrients and nutritional value of food.
3. Carbohydrates (stereochemistry, chemical and physical properties, structural and storage polysaccharides).
4. Proteins (structure, role, physical and chemical properties).
5. Fats and oils (chemical structure, chemical and physical properties, fatty acids in food).
6. Water (water in food, chemical structure, chemical and physical properties).
7. Minerals (macronutrients, micronutrients and their role).
8. Vitamins and food additives (antioxidants, preservatives, colorings).
9. Contemporary challenges of the agri-food and food sector.
10. Origin and categories of food.
11. Hygiene and food safety, spoilage, sources of contamination (effects of microorganisms on food, desirable and undesirable changes, toxins).

12. Principles of food processing, preservation and packaging (principles of heating, cooling, freezing, condensation/drying).
13. Qualitative and sensory evaluation of food.

TEACHING METHODS--ASSESSMENT

<table>
<tr><td>MODES OF DELIVERY
Face-to-face, in-class lecturing, distance teaching and distance learning etc.</td><td>Face-to-face, in-class lecturing</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in teaching, Laboratory Education, Communication with students</td><td>Power point presentation, Whiteboard writing, Communication with students through e-class and e-mails</td></tr>
<tr><td>OURSE DESIGN
Description of teaching techniques, practices and methods:
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.
The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</td><td>
<table>
<tr><th>Activity/Method</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>78</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Total contact hours and training</td><td>78</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS
Detailed description of the evaluation procedures:
Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.
Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</td><td>Final written examination that includes:
-multiple choice questions
-fill-in the blanks questions
-short answer questions</td></tr>
</table>

SUGGESTED READING:

- Abuhav, I. (2016). A Complete Guide to Quality Management Systems. Taylors and Francis, Portland, OR.
- Campbell-Platt, G. (2017) Food Science and Technology. 2nd ed. Willey, Hoboken, NJ.
- Bélanger, J. and D. Pilling. (2019) The State of the World's Biodiversity for Food and Agriculture. FAO, Rome.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
INTRODUCTION TO FOOD SCIENCE AND TECHNOLOGY			
10	3	1%	1%
9	2	1%	2%
8	29	14%	17%
7	54	26%	43%
6	116	57%	100%
	204	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST105**	**SEMESTER**	1
COURSE TITLE	**INFORMATICS APPLICATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Lab	2	
Total	4	4
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*	General background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in Greek
COURSE WEBSITE (URL)	

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 students will have acquired the necessary knowledge to:

- Create and edit text (MS Word)
- Create and edit spreadsheets (MS Excel)
- Create graphs and perform calculations
- Create graphical presentations using MS-Power Point.
- Use internet (Internet Explorer), e-mail (Outlook Express)
- Search for scientific information on platforms (Google Scholar etc.) and in electronic journals/ scientific journals electronic databases

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

COURSE CONTENT

Theoretical Part of the Course

Introduction to the use of computers. Digital systems. Technical characteristics of computers. Microprocessors. Microcomputers. Operating systems, windows programs, programs for recording, processing and data management, word processing programs, graphic display programs.

1. Introduction to computers (Basic hardware and software components. Data storage and management. Computer structure. Terminals, workstations and networks. Introduction to the basic types of software).
2. Information Processing (Data input modules, techniques, and applications in real-world problems. Secondary memory modules: disks, floppy disks, CD-ROMs, VDUs, printers, and other output modules. Windows operating system and file storage. Basic file organization) .
3. Data Communication (Introduction to networks. Basic network topologies. Basic concepts of Internet, communication and information search. Use of the Internet and e-mail).
4. Copywriter (Start Word. Create documents. Edit documents. Move and copy text. Work with fonts. Work with paragraphs. Language checking tools. Text layout. Print. Tables. Merge mail. Graphics. Save).
5. Spreadsheets (Start. Create workbooks. Perform basic calculations. Format. Change structure. Print. Work with multiple sheets. Graphs / Pictures).

Laboratory Part of the Course

• Introduction to the MS Windows operating system (Basics and Concepts, File Management, Windows embedded applications, Control Panel, Install - Uninstall Programs, Prints, Security and Virus Management). Text Editing (MS Word), Spreadsheets (MS Excel). Graphic presentations using MS-Power Point. Learning and using the internet

(Internet Explorer), e-mail (Outlook Express), information retrieval (Google, Yahoo, etc.) and international bibliography (electronic journals and scientific electronic databases).

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Internet
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*	<table><tr><th>*Activity*</th><th>*Semester workload*</th></tr><tr><td>Lectures</td><td>78</td></tr><tr><td>Laboratory</td><td>26</td></tr><tr><td></td><td></td></tr><tr><td>Total contact hours and training</td><td>**104**</td></tr></table>
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.*	Theoretical part : - Comprehension / short answer questions - Multiple Choice or Right Wrong Questions Laboratory part: - Comprehension / Short Answer Questions - Comparative evaluation of Theory, and laboratory Exercises Gravity factors to extract the final grade are: 40% laboratory grade and 60% theory grade

ATTACHED BIBLIOGRAPHY

3. Εισαγωγή στην Πληροφορική, Συγγραφείς: Αθ. Τσουροπλής, Κ. Κλημόπουλος, Εκδόσεις Νέων Τεχνολογιών
4. • Χρήση Υπολογιστή, Συγγραφείς: Χρ. Κοίλιας, Στρ. Καλαφούτης, Εκδόσεις Νέων Τεχνολογιών
5. • Exploring Windows, Publisher: Prentice- Hall, Authors: R.T. Grauer and M. Barber
6. • Exploring Microsoft Word, Publisher: Prentice- Hall, Authors: R.T. Grauer and M. Barber
7. • Exploring Microsoft Excel, Publisher: Prentice- Hall, Authors: R.T. Grauer and M. Barber

Performance Statistics of the last 2 years

Grade (descending order)	absolute frequency	relative frequency (%)	Sum of success rates per class (%)
ΕΦΑΡΜΟΓΕΣ ΠΛΗΡΟΦΟΡΙΚΗΣ			
10	62	33%	33%
9	45	24%	57%
8	33	18%	74%
7	32	17%	91%
6	16	9%	100%
	188	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST106**	**SEMESTER**	1
COURSE TITLE	**ECONOMICS & AGRIBUSINESS MANAGEMENT**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	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*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Describe the basic terms related to economic theories.
- Understand the objectives of the application of economic theories.
- Describe the importance of the economic and physical environment for financial institutions
- Understand the importance of proper staffing and management of human resources for the proper functioning of an economic organisation.
- Plan and make decisions for the development of economic organisations.
- Organise the processes of an enterprise

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

General skills:

1. Adaptation to new situations.
2. Decision making.
3. Autonomous work.
4. Teamwork
5. Exercise criticism and self-criticism.
6. Promotion of free, creative and inductive thinking.
7. Search, analysis and synthesis of data and information, in order to apply the theory in practice

SYLLABUS

Theoretical Part of the Course
Introduction, the modern Greek company, management as a means of activating business organizations, the concept and nature of programming, decision making, fundamental principles of the organization, assignment of activities, the object of staffing, pre-recruitment procedures, post-recruitment staff procedures, motivating employees, accepting change, leadership, effective communication, control activity, information and knowledge management, total quality management, global management, personal time management, personal management for a successful career

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication**

	with students via web, e-mail, e-class and online folder sharing options etc.
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.*	Evaluation procedure performed in Greek. Written examination on graded difficulty topics, including text development and comprehension questions

Activity	*Semester workload*
Lectures	117
Total contact hours and training	***117***

BIBLIOGRAPHY

Ελληνική

Οργάνωση και Διοίκηση: Το management της νέας εποχής. Εκδόσεις Rosili. 4ηέκδοση, 2007

Ξενόγλωσση

Economic Theory. Springer

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
ECONOMICS & ORGANIZATION OF FOOD BUSINESSES			
10	27	13%	13%
9	7	3%	17%
8	42	21%	38%
7	77	38%	76%
6	49	24%	100%
	202	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST107**	**SEMESTER**	**1**
COURSE TITLE	**PHYSICS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory experiments		
Total	2	3
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*	General background / Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Describe the basic principles of Physics
- Identify and use the international system of units measurement
- Understand and describe natural processes and phenomena
- Analyse experimental data

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Data collection and analysis
- Critical thinking
- Decision-making
- Working independently

SYLLABUS

Introduction to error theory. Physical quantities, international system of units, coordinate systems, Newton's laws, equilibrium conditions, power, work, energy, forms of energy. Oscillations, resonance, transverse and longitudinal waves, standing waves. Ideal and real gases. Thermal properties of matter. Emission and absorption spectra, optics, reflection and refraction, polarization of light, optical fibers. Selected topics in Fluid Engineering and Heat Transfer.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of information technologies in data collection, teaching and communication. Communication with students via e-mail, eClass, Viber.
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 assessment: Greek • Evaluation methods - Midterm exam

Activity	*Semester workload*
Lectures	78 hours
Total contact hours and training	**78 hours**

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.*	- Final exam

BIBLIOGRAPHY

- J. McMurry, Organic Chemistry
- Ι. Σπηλιόπουλος, Βασική οργανική χημεία
- Ν. Αργυρόπουλος, Ε. Κουτούλη-Αργυροπούλου, Κ. Λίτινας, Ε. Μαλαμίδου-Ξενικάκη, Α. Μαρούλης, Σ. Σπυρούδης, Κ. Τσολερίδης, Κ. Χατζηαντωνίου-Μαρούλη, Πειραματική Οργανική Χημεία

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
PHYSICS			
10	41	24%	24%
9	30	18%	42%
8	36	21%	63%
7	14	8%	71%
6	50	29%	100%
	171	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST201**	**SEMESTER**	**2**
COURSE TITLE	**ORGANIC CHEMISTRY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Laboratory experiments	2	
Total	5	7
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*	General background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Describe the basic principles of Organic Chemistry
- Identify the functional groups of organic compounds, understand the reactions and the mechanisms associated with them and the correlation between the structure of a compound and its properties.
- Predict the physicochemical properties of organic compounds from molecular structure.
- Identify and implement essential apparatus, instruments and processes in an Organic Chemistry lab

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Critical thinking
- Decision-making
- Working independently
- Team work

SYLLABUS

Structure of organic compounds, types of bonds, functional groups, structural and molecular formulas. Isomerism. Nomenclature of organic compounds. Spectroscopy. Saturated and unsaturated hydrocarbons. Benzene and aromatic compounds. Alcohols and ethers. Carbonyl compounds, carboxylic acids, esters, amides. Amines, amino acids, peptides, proteins, lipids. Ionic properties of amino acids, methods of studying proteins. Carbohydrates.

Molecular structure and physical properties.

Typical lab experiments

- Molecular structure and physical properties
- Separations based on physical properties
- Separations based on chemical properties
- Solvents
- Thin layer chromatography
- Reactions of organic compounds
- Identification of organic compounds
- Preparation and isolation of a natural product

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of information technologies in data collection, teaching and communication. Communication with students via e-mail, eClass, Viber.
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.*	• Language of assessment: Greek • Evaluation methods - Midterm exam - Final exam

Activity	*Semester workload*
Lectures	117 hours
Laboratory experiments	26 hours
Total contact hours and training	**143 hours**

BIBLIOGRAPHY

- J. McMurry, Organic Chemistry
- Ι. Σπηλιόπουλος, Βασική οργανική χημεία
- Ν. Αργυρόπουλος, Ε. Κουτούλη-Αργυροπούλου, Κ. Λίτινας, Ε. Μαλαμίδου-Ξενικάκη, Α. Μαρούλης, Σ. Σπυρούδης, Κ. Τσολερίδης, Κ. Χατζηαντωνίου-Μαρούλη, Πειραματική Οργανική Χημεία

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
ORGANIC CHEMISTRY			
10	4	3%	3%
9	5	4%	7%
8	20	17%	24%
7	22	18%	42%
6	70	58%	100%
	121	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDREGRADUATE		
COURSE CODE	**FST202**	**SEMESTER**	2
COURSE TITLE	**QUANTITATIVE CHEMICAL ANALYSIS**		

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	2	
Laboratory exercise	2	
Total	4	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*	General background, general knowledge, skills development
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

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*

- To know the basic concepts of quantitative chemistry.
- To understand the methods applied to each quantitative analysis.
- To familiarize with the use of reagents and the handling of instruments that can befound in a chemical laboratory.
- To apply the safety rules in the laboratory.
- To perform quantification experiments.
- To solve quantitative chemistry exercises.
- To interpret and present scientifically substantiated the results of a quantification.

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 Working in an international environment Working in an interdisciplinary environment Production of new research ideas	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 …… Others… …….

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Content of theoretical course:

Introduction to Quantitative Chemistry. Solutions. Errors. Chemical reactions. Stoichiometric calculations. Chemical balance. Gravimetric analysis. pH. Buffers. Volumetric analysis, stoichiometry, equivalent point, neutralization, titration curves, measurement errors, accuracy, repeatability. Classification of volumetric methods. Neutralization titrations, acidimetry and alkalimetry. Precipitation titrations. Silvermetric titration. Redox titrations. Iodometry. Iodimetry. Complexometric titrations. Manganometry.

Content of laboratory course:

1) Introduction to Quantitative Chemistry (Safety rules in the laboratory, Instruments and their handling)
2) Contents, Concentrations, Solutions, Exercises
3) Neutralization titrations - Acidimetry
4) Neutralization titrations - Alkalimetry
5) Buffers (Production, Buffer Calculation)
6) Precipitation titrations - Silvermetric titration
7) Redox titrations - Iodometry and Iodimetry
8) Gravimetric analysis (Determination of solid material moisture)
9) Complexometric titrations (Determination of water hardness)
10) Reduction oxidation titrations

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching. Communication with students via e-class, e-mail, etc.
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*	*Activity* / *Semester workload* Lectures: 78 Laboratory practise: 26 **Total contact hours and training**: *104*
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.*	Language of evaluation: Greek Methods of evaluation: Progress work during the semester (formative) Final examination (Concluding) Theoretical part: multiple choice questionnaires, short-answer questions, open-ended questions, problem solving. Laboratory part: multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, laboratory work. Final grade: 60% theoretical grade and 40% laboratory grade The accessibility of students in criteria and final results is through website and/or e-class.

BIBLIOGRAPHY

- Themelis, D., Zachariadis, G. (1997). Analytical Chemistry. Publication: Ziti Pelagia & SIA (in Greek)
- Xenos, K. (2002). Analytical Chemistry. Publication: Maria Parikou & SIA (in Greek)
- Voulgaropoulos, A., Zachariadis G., Stratis, I., Anthemidis, A. (2012). Quantitative Analytical Chemistry. Ziti Publications (in Greek)

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
QUANTITATIVE CHEMISTRY			
10	15	6%	6%
9	29	12%	18%
8	52	21%	39%
7	65	26%	65%
6	85	35%	100%
	246	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST203**	**SEMESTER**	2
COURSE TITLE	**STATISTICS APPLICATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- describe the basic principles of statistical analysis
- use specific software tools for statistical analysis
- carry out statistical analysis on subjects related to food technology and science
- evaluate and interpret the results of statistical analysis

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Use of statistics in food technology. Descriptive statistics, methods of statistical analysis, estimation of central tendency and dispersion of numbers. Probability data. Basic distributions (normal, binomial, Poisson). Sampling - experimental designs. Derivative distributions (t - distribution, $\chi 2$ distribution). Statistical tests, analysis of variance, non-parametric tests. Linear regression and correlation. Statistical quality control - control charts.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	117
Total contact hours and training	***117***

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.*	Evaluation procedure performed in Greek. Written Evaluation

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.BOOK [68402975]: Στατιστικές Μέθοδοι και Ανάλυση Παλινδρόμησης για τις νέες τεχνολογίες, Φιλιππάκης Μ.

2.BOOK [50659284]: Εισαγωγή στις Πιθανότητες και τη Στατιστική, Γεώργιος Κ. Παπαδόπουλος

3.BOOK [68373083]: Μέθοδοι Επιχειρηματικής Έρευνας, Quinlan Christina, Zikmund William

4.BOOK [13256511]: Θεμελειώδεις έννοιες στη βιοστατιστική, Bowers D.

5.BOOK [59388202]: Στατιστική, 5η Έκδοση, SpiegelMurrayR.,StephensLarryJ.

6.BOOK [32998985]: ΣΤΑΤΙΣΤΙΚΗ, Günter Bamberg, Franz Baur, Michael Krapp

7.BOOK [59377478]: Στατιστική Μέθοδοι Ανάλυσης για Επιχειρηματικές Αποφάσεις (4η έκδοση), Ιωάννης Χαλικιάς

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
STATISTICS			
10	15	6%	6%
9	14	6%	12%
8	18	8%	20%
7	22	9%	30%
6	164	70%	100%
	233	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	**FST204**	**SEMESTER**	2
COURSE TITLE	**GENERAL MICROBIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	3	
Total	5	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 aim of General Microbiology course is for students to develop an understanding of the basic concepts of microorganisms and be familiar to the specific biochemical and physiological characteristics used to classify them.

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

- Identify microorganisms and explain the biochemical and physiological activities through which microorganisms perform their work, beneficial or harmful.
- Carry out microbiological techniques and methodologies, with particular emphasis on microbiological analyses of foodstuffs.

- Select the most appropriate method of microbiological analysis and interpret its results.
- Evaluate and apply new and innovative proposed methods of microbiological analysis and compare them with classical methodology.
- Provide a knowledge base on which to build an understanding of topics related to microbiology, biotechnology and food hygiene.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking

SYLLABUS

Lectures

- Microorganisms as Cells
- Viruses and Prions
- The Impact of Microorganisms on Human Affairs
- Classification of Microorganisms
- Microbial Cell Biochemistry
- Factors affecting Microbial Growth in Foods
- Humidity, Water Activity
- ReDox Potential
- pH
- Nutrients
- Microbial Contamination of Food Products - Physical and Chemical Changes Caused
- Food Preservation
- Industrial Microorganisms
- Food Spoilage
- Microbial Pathogens – Food Poisoning (physiology, disease – symptoms, prevention and control

- Methods of Enumeration and Detection of Microbial Population in Foods

Laboratory Practice

- Laboratory Safety: General Rules and Regulations
- Bacteria Morphology: Simple Stain, Negative Stain, Gram-Stain, Ziehl-Neelsen, Endospore Stain, Capsule stain
- Culture Media: Nutritional Requirements, Preparation, Usage, Inoculation
- Techniques for Isolation of Pure Cultures: Isolation of Discrete Colonies from a Mixed Culture (Streak or Spread Plate)
- Bacteria Identification: Physiological and Nutritional Requirements, Physical Requirements (Temperature, Oxygen), Biochemical Activities (Catalase test, Oxidase test, etc.)
- Sugar Utilization (Hugh-Liefson test, M.R.-V.P.
- Protein Utilization: Casein and Zelatin Hydrolysis, Hemolysis
- Aminoacid Utilization: Lysine Decarboxylation, Phenylalanine deamination, H_2S Production
- Organic Acid Utilization
- Protozoa (environmental, parasitic)
- Fungi: Cultivation and Morphology, Identification
- Yeast: Cultivation and Morphology, Reproduction and Identification
- Bacteria: Isolation, Cultivation, Enrichment
- Biochemical and Immunological Tests for Bacteria Identification
- Identification of Bacteria Using Molecular Biology Tests
- Physical and Chemical Agents for the Control of Microbial Growth
- Bacterial Genetics

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing
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*	

Activity	***Semester workload***
Lectures	78
Laboratory practice	39
Total contact hours and training	***117***

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.*	**Final written examination in theory and in laboratory that includes:** **Language of evaluation: Greek** Midterm and final exams (fill-in the blanks questions, short answer questions, multiple choice questions) Students' access is to both the criteria and the examination results performed through the departmental site and/or the e-class platform.

4. ATTACHED BIBLIOGRAPHY

1. Bibek Ray, Arun Bhunia (2013). Fundamental Food Microbiology, Fifth Edition. CRC Press
2. Martin R Adams, Maurice O Moss, Peter McClure (2016). Food Microbiology. Royal Society of Chemistry
3. James M. Jay, Martin J. Loessner, David A. Golden (2008). Modern Food Microbiology. Springer Science & Business Media
4. Brock: Biology of microorganisms. Madigan, Martinko Bender, Buckley και Stahl.
5. Microbiology: A human Perspective, 7th edition, by Nester, Anderson & Roberts. 2011. McGraw-Hill Publishing Company.
6. Microbiology: An Introduction, 11th edition, by G.J. Tortora, RB.R. Funke and C.L. Case.

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
GENERAL MICROBIOLOGY			
10	14	9%	9%
9	29	18%	27%
8	44	27%	54%
7	47	29%	83%
6	28	17%	100%
	162	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	FST205	**SEMESTER**	2
COURSE TITLE	**NUTRITION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	General Background, specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 completion of the course, the student is expected to be able to:

- describe the basic and necessary information regarding nutrition, food ingredients, nutritional value and the importance of nutrition.
- understand and be able to interpret the role of nutrients in the normal functioning of the human body,
- describe the nutritional needs at different ages
- explain the effects of excessive intake or lack of each category

- correlate pathological conditions of the body with nutritional elements

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Chemical elements and their compounds as components of diet. Organic ingredients, Trace elements, Principles and rules of healthy eating. Nutrition and health relationships, Energy needs of the human body, energy needs assessment

Water in food, drink and diet. Drinking water, Beverages, Flavonoids, Aromatic plants, Polyphenols and their antioxidant activity

Sugars - carbohydrates. Description. Pectins. Important carbohydrate foods and their role in the diet. Dietary fiber, carbohydrate fermentation

Fats and oils. Description. Fatty acids and foods. The importance of triglycerides for proper nutrition

Proteins or albumins. Basic protein foods. The role of proteins in the diet. Enzymes in food technology and nutrition

Vitamins. Fat-soluble and water-soluble vitamins

Nutritional suggestions. Applications of dietary standards and instructions. Calculation of calories and diet recommendation

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, contact and access via web platform (e-class), contact via e-mails and in-office hours
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*	***Activity*** / ***Semester workload*** Lectures: 117 Total contact hours and training: ***117***
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.*	**Language of evaluation: Greek** Written final exams that include subjects of graded difficulty.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.BOOK [13256445]: Εγχειρίδιο διατροφής, Biesalski Hans - Konrad,Grimm eter Λεπτομέρειες
2.BOOK [68399883]: ΔΙΑΤΡΟΦΗ του ΑΝΘΡΩΠΟΥ, Σφλώμος ΚωνσταντίνοςΛεπτομέρειες
3.B [33155038]: Εισαγωγή στη διατροφή του ανθρώπου, GIBNEY ICHAEL. J. , SUSAN A. LANHAM-NEW, AEDIN CASSIDY, HESTER H. VORSTER Λεπτομέρειες

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
NUTRITION			
10	24	10%	10%
9	26	11%	21%
8	37	15%	36%
7	54	23%	59%
6	98	41%	100%
	239	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST301**	**SEMESTER**	**3**
COURSE TITLE	**Food Biochemistry**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory	2	
Total	4	6
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*	Special background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

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 students will be able to:

- recognize basic biomolecules (carbohydrates, proteins, lipids, nucleic acids) and their chemical composition, structure and function.
- classify proteins based on their structure and the functions.
- describe biosynthesis and catabolism of biomolecules.
- know the role of nucleic acids in the biosynthesis of proteins.
- know the mechanisms of enzymatic reactions and to determine their kinetic constants.

- understand the basic biochemical changes in food processing and processing.
- integrate their knowledge in the design of new methodological and experimental approaches in the field of Food Science and Technology and other related sciences.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working in an interdisciplinary environment.
- Working in an international environment.
- Decision making.
- Autonomous work.
- Teamwork.
- Promote creative and inductive thinking.
- Analyze and synthesize of data and information in order to apply the theory in practice.

SYLLABUS

The course is the introductory theory to the basis of Food Biochemistry. It aims to give the students the acquisition of knowledge on the basic categories of biomolecules and the understanding of the basic biochemical metabolic pathways. The course material also aims at the study and understanding of biochemical processes that take place during the conversion of raw material (e.g. meat, milk, cereals, fruits and vegetables) in an edible finished product or a new type of food. Finally, the course aims to educate students on basic methodological and experimental applications in the field of Food Biochemistry. Specifically, in the context of the course lectures, the following will be analyzed, among others.

THEORY

• Introduction to Food Biochemistry: proteins, carbohydrates, lipids, membranes, enzymes and coenzymes.
• Basic principles of metabolism. Biological oxidations. Metabolism of carbohydrates, lipids and amino acids.
• Principles of gluconeogenesis, glycogen metabolism.
• Structure and role of nucleic acids, biosynthesis of macromolecule precursors, flow of genetic information, gene expression.
• Biosynthesis of food ingredients (e.g. milk).
• Biochemical changes in foods (meat, fish, cereals).
• Protein metabolism and gene expression.

LABORATORY

• Food enzymes: β-galactosidase, catalase and invertase study
• Study of reducing sugars

- Isolation and characterization of milk casein
- Amino acid analysis by thin-layer chromatography
- Effect of processing and storage on food natural colorants
- Quantification of food vitamins
- Isolation of characterization of food nucleic acids
- DNA electrophoresis

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of video projector and computer, Internet use
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.*	I. Final written examination in Theory course include: - Short answer questions - Multiple choice questions or Right/Wrong questions II. Final written examination in Laboratory course include: - Short answer questions - Multiple choice questions or Right/Wrong questions Gravity factor of the score is: THEORY 60% of the final course grade and LABORATORY 40% of the final course grade.

Activity	***Semester workload***
Lectures	78
Laboratory	26
Total contact hours and training	***104***

ATTACHED BIBLIOGRAPHY

1. A. Vafopoulou Mastrogiannaki, Food Biochemistry A, ZITI Publications (2003) ISBN 960-431-830-6 & 13 978-960-431-830-8 *(in Greek).*
2. G. Diamantidis, Introduction to Biochemistry, UNIVERSITY STUDIO PRESS Publications (2017), ISBN 978-960-12-2356-8 *(in Greek).*

3. S. Kalogiannis, Introduction to Biochemistry, ZITI Publications (2018), ISBN: 978-960-418-722-5 *(in Greek).*
4. B.K. Simpson, Food Biochemistry and Food Processing, Wiley-Blackwell, 2012, ISBN 081380874X
5. C. Alais & G. Linden, Food Biochemistry, Ellis Horwood Ltd., 1991, ISBN 0-7476-0061-9
6. J. M. Berg, J. L. Tymoczko, L. Stryer, Biochemistry, University Press Kritis (2014), ISBN-13: 9789605244233 *(in Greek).*
7. Escin Michael NA. Biochemistry of Foods. Academic Press 2013.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD BIOCHEMISTRY			
10	9	7%	7%
9	10	7%	14%
8	32	24%	38%
7	48	36%	74%
6	35	26%	100%
	134	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	**FST302**	**SEMESTER**	3
COURSE TITLE	**FOOD PROCESSING I**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	3	
Total	5	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in Greek
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 of **Food Processing I** correlates with the principles of food preservation and the methods to achieve food heat processing and low-temperature processing.

The course aims to educate students on the principles and methodologies to perform heat processing, refrigeration and freezing of foods, targeting the inhibition of microbial growth and maintenance of the quality properties of foods.

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

- Highlight the causes of food spoilage

- Describe the role of processing in the food industry
- Select and apply appropriate methods of heat treatment of food
- Select and apply appropriate methods of preserving and cooling food at low-temperatures
- Evaluate and present the results of laboratory exercises

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Team work
- Decision-making
- Solving problems

SYLLABUS

Theoretical part

1. Introduction to Food Processing I.
2. Factors affecting food spoilage. Microbial growth. Role of pH and water activity.
3. Thermal Food Preservation techniques: Pasteurization and sterilization.
4. Thermal Food Preservation techniques: Aseptic processing. Canning.
5. Heat transfer. Calculations for heat processing.
6. Low temperature food processing: refrigeration.
7. Methods of refrigerating foods.
8. Physiological and biochemical changes in refrigerated foods.
9. Low temperature food processing: freezing.
10. Methods of freezing foods.
11. Physiological and biochemical changes in frozen foods.

Laboratory practice

1. Introduction to Food Processing I.
2. Factors affecting food spoilage.
3. Scalding
4. Pasteurization.
5. Gelling process.
6. Heat processing by cooking: boiling, baking, sous vide
7. Frying
8. Canning.
9. Refrigeration.
10. Freezing.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing, solving problems Laboratory practice
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.*	**Final written examination in theory and in laboratory that include:** -multiple choice questions -short answer questions -judgment questions -problem solving -presentation

Activity	*Semester workload*
Lectures	78
Laboratory practice	39
Total contact hours and training	***117***

ATTACHED BIBLIOGRAPHY

1. Conventional and advanced Food Processing Technologies (2015). S. Bhattacharya, (Ed.). John Willey & Sons, Ltd. UK.
2. Food Processing 1 (2016). 2nd Edition, E. S. Lazos, A. E. Lazou, Papazisis Press, Athens.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD PROCESSING I			
10	4	3%	3%
9	8	6%	9%
8	32	24%	32%
7	54	40%	72%
6	38	28%	100%
	136	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST303**	**SEMESTER**	**3**
COURSE TITLE	**FOOD ANALYSIS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory exercise	2	
Total	4	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes in Greek
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 the successful completion of the course, the student will be able:

- Describes the composition of food
- formulate the principles of the main methods of food analysis
- Distinguish and select the appropriate analytical methods according to the food and the ingredient to be analysed
- Identify and use scientific equipment relevant to food analysis
- Perform analytical techniques and comply with safety rules in a laboratory setting
- Collect experimental data and make calculations to draw conclusions

- Interpret the results obtained from the various methods of food analysis

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part of the course:

The importance of food analysis. Food analysis methods and principles of quality control, prerequisites and legislation. Sampling, handling and preparation of laboratory samples for analysis. Macroscopic control and evaluation. Results presentation regarding the composition and quality of food.

Analytical methods to determine moisture content, ash, pH and acidity, protein, carbohydrate, oil and fat, vitamins, additives, inorganic compounds and natural antioxidants. Applications and examples of the latter methods on food analysis. Presentation of officially approved methods complying with current legislative regulations.

Laboratory exercises:

- Determination of moisture content
- Determination of ash content and alkaline ash in food
- Determination of titrable acidity
- Determination of sodium chloride in selected foods
- Determination of total nitrogen content using the Kjeldahl process
- Determination of fat using the Soxhlet method
- Determination of reducing sugars with the DNS method
- Determination of vitamin C through titration
- Determination of gluten in flour
- Determination of Free Amino Nitrogen (FAN) using the ninhydrin colorimetric method

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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.*	Evaluation procedure performed in Greek Evaluation procedures: Written evaluation in questions of scaling difficulty • Two examination tests are performed in-between semester • Final examination The final grade is determined by the following formula: 40% of laboratory exercise grade and 60% of theory examination grade.

Activity	*Semester workload*
Lectures	78
Laboratory exercise	26
Total contact hours and training	***104***

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Andrikopoulos, Food Analysis, 2010 (In Greek)

Arvanitogiannis, I., Varzakas, T., Tzifa, K., Food Quality Control, Laboratory exercises, 2008 (In Greek).

Polychroniadou-Alichanidou A., Food Analysis, Methods and Principles, 1996 (In Greek).

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD ANALYSIS			
10	1	1%	1%
9	3	3%	4%
8	6	6%	9%
7	32	30%	40%
6	64	60%	100%
	106	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	**FST304**	**SEMESTER**	3
COURSE TITLE	**FOOD MICROBIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	3	
Total	5	**9**
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

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 aim of Food Microbiology course is for students to develop an understanding on the general biology of the microorganisms found in foods including their growth characteristics, identification and pathogenesis as well as food poisoning, food spoilage, food preservation, and food legislation

Upon successful completion of the course students will:

- Have the expertise to perform microbiological analysis in food and evaluate their microbiological quality
- Be able to describe the characteristics of foodborne, waterborne and spoilage microorganisms based on the

preservation method used

- Be able to explain why microbiological quality control programs are necessary in food production
- Be able to establish and supervise a HACCP plan system
- Be able to chose the appropriate method of microbiological analysis in foods and analyze its results.
- Be able to evaluate and apply new methods for the microbiological analysis of foods and compare their results with those of standard methods and procedures used.
- Choose the proper method for microbiological analysis and evaluate its results
- Evaluate and apply new methods of analysis of food commodities and compare their results with those of standard methods.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Decision-making
- Solving problems
- Projects

SYLLABUS

Lectures

- Pathogenic Bacteria, Viruses and Fungi in Food and Water Supplies
- Sources of Food Contamination and Poisoning – Factors Influencing Microbial Growth in Food
- Microorganisms Used in Food Fermentations
- Microbial Enumeration in Food Products (Selective and Differential Media, Enrichment Culture Technique)
- Microbial Challenges in the Food Chain (Production, Transfer, Storage)
- Microbial Industrial Enzymes
- Food Poisoning and Food Infection
- Regulations and Standards – Standard Methods in Food Microbiology

Laboratory Practice

- Growth of *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus*, *Salmonella* sp., *Shigella* sp., *Listeria monocytogenes*, *Vibrio parahaemolyticus*, *Clostridium perfringens* (all ATCC strains) on selective and differential media.
- Microbiological Analysis of Canned Foods

- Microbiological Analysis of Cereals
- Microbiological Analysis of Milk and Dairy
- Microbiological Analysis of Eggs and their Products
- Microbiological Analysis of Fish and their Products
- Microbiological Analysis of Fruit Juices and Soft Drinks
- Microbiological Analysis of Meat and Meat Products
- Microbiological Analysis of Spices
- Microbiological Analysis of Fruits and Vegetables
- Microbiological Analysis of Water (Most Probable Number and Membrane – Filter Technique)
- Microbiological Analysis of Industrial Surfaces and Machinery
- Use of Rapid Tests in Food Microbiology

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing
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*	**Final written examination in theory and in laboratory that includes:** -fill-in the blanks questions -short answer questions -multiple choice questions

Activity	***Semester workload***
Lectures	78
Laboratory practice	39
Total contact hours and training	***117***

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

ATTACHED BIBLIOGRAPHY

1. Bibek Ray, Arun Bhunia (2013). Fundamental Food Microbiology, Fifth Edition. CRC Press
2. Martin R Adams, Maurice O Moss, Peter McClure (2016). Food Microbiology. Royal Society of Chemistry

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD MICROBIOLOGY			
10	36	18%	18%
9	13	6%	24%
8	28	14%	38%
7	39	19%	57%
6	86	43%	100%
	202	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST305**	**SEMESTER**	3
COURSE TITLE	**FOOD MARKETING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 student will be able to:

- Describe the meaning and philosophy of marketing
- Comprehend the concept of marketing and the concept of market
- Understand the importance of planning and marketing strategies
- Describe the information system and marketing research
- Identify and express the consumer buying behavior
- Perceive market segmentation

- Understand product strategies

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- General skills
- Adaptation to new situations.
- Decision making.
- Autonomous work.
- Teamwork
- criticism and self-criticism.
- Promotion of free, creative and inductive thinking.
- Search, analysis and synthesis of data and information, in order to implement theory in practice

SYLLABUS

Theoretical Part of the Course

Introduction, discovering food consumption, quality management, nutritional risk and food chain, understanding the consumer: information processing, the purchase and consumption of products, the use of research tools for diagnosis and monitoring of food markets, how to build a marketing strategy in the industry food products, food product management, branding and innovation, food promotion and communication.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	*Semester workload*
Lectures	117

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*	Total contact hours and training	***117***
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.*	Evaluation procedure performed in Greek. Written examination in matters of graded difficulty, which include a) text development, b) comprehension questions.	

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
FOOD COMPANIES MARKETING			
10	36	18%	18%
9	13	6%	24%
8	28	14%	38%
7	39	19%	57%
6	86	43%	100%
	202	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST401**	**SEMESTER**	**4**
COURSE TITLE	**FOOD ENGINEERING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory exercise	2	
Total	4	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 aim of the course is to introduce students to the principles of Food Engineering. in parallel to the theoretical knowledge.

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

- Calculate and determine key quantities necessary in food processing.
- Interpret situations and changes observed in food processing processes
- Calculate parameters and variables as well as mass balances in processes
- Convert size units related to the main physical properties of food
- Understand and apply mass balances in processes
- Understand the mechanisms of mass and energy transfer
- Calculate quantities such as process time, energy required and flow rates for equipment selection and cost

estimation of processes

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part

Systems of units, mass and energy balances, applications in the Food industry.

Definition of viscosity, types of flow and fluids, basic fluid equations, applications in the Food industry.

Heat transfer to a permanent state by conduction, transfer and radiation, heat exchange.

Basic concepts of thermodynamics and applications in the food industry.

Laboratory Part

Laboratory Exercises

1. Mass Balances
2. Viscosity measurement
3. Filtration
4. Drying
5. Heat transfer
6. Centrifugation
7. Sedimentation
8. Mixing

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	78
Laboratory exercise	26
Total contact hours and training	***104***

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.*	Theoretical part: Written examination on graded multiple choice difficulty plus a Written project on food industry case study language - Greek Laboratory part: Submission of written laboratory reports plus a written examination in laboratory exercises. Language of assessment - Greek

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- *Ζόγκζας Ν., Βασικές Αρχές Μηχανικής Τροφίμων, Εκδόσεις Τζιόλα 2017*
- *PaulSinghR., HeldmanD., Εισαγωγή στη Μηχανική Τροφίμων, Εκδόσεις Παρισιάνου 2016*
- *Λαμπρόπουλος Α. , Ανέστης Σ., Μηχανικές και Θερμικές Διεργασίες των Τροφίμων, Θεωρία, 2005.*
- *Λαμπρόπουλος Α. , Ανέστης Σ., Μηχανικές και Θερμικές Διεργασίες των Τροφίμων, Εργαστηριακό Εγχειρίδιο, 2005.*
- *Λαζαρίδης Χ., Μηχανική Τροφίμων, 2007*
- *Mc Cabe, Warren L., Smith, Julian C., Harriot, Peter, "Βασικές Διεργασίες Χημικής Μηχανικής"(μετάφραση), Τζιόλα 2002.*

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD ENGINEERING			
10	12	7%	7%
9	41	24%	31%
8	59	34%	65%
7	46	27%	91%
6	15	9%	100%
	173	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST402**	**SEMESTER**	4
COURSE TITLE	**FOOD CHEMISTRY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory exercise	2	
Total	4	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 the successful completion of the course, the student will be able:

- To know the basic food components (water-ice, carbohydrates, lipids, amino acids, peptides, protein, enzymes).
- To understand the structure of the aforementioned components
- To understand their primary chemical and biochemical properties but also their functions
- To understand the basic functional properties of protein, polysaccharides and lipid compounds.

- To understand the conditions of disintegration in food systems and controlled the physicochemical processes involved.
- To interpret the behaviour, performance and interactions of primary food components within a food system.
- To describe the basic physical, chemical and biochemical processes that affect food quality degradation during food processing and preservation, impair food quality and also shelf life of food.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part of the course:

- Water: physical properties, structure water-ice, interactions of water with other water soluble compounds, sorption phenomena, water activity (a_w) and food stability.
- Carbohydrates: classification, names, structures and dietary function. Monosaccharides, oligosaccharides, polysaccharides. Carbohydrate reactions. Hydrolysis, dehydration, thermal degradation, non-enzymatic browning. Mono- and oligosaccharides functions in foods. Hydrophilic character, sweetness, food browning products. Functional properties of polysaccharides. Interaction of food structure and physical properties, Water-polysaccharides interactions, acidic polysaccharides. Starch, structure of starch granules, starch gelatinisation and gel formation, starch rearrangement. Modified starch. Glycogen, cellulose, hemicellulose. Pectine, natural gums.
- Lipids: Classification and names. Fatty acids, acylglycerol, phospholipids, glycolipids, lipoproteins. Physical and chemical properties. Oil and fat, composition, properties, chemical activity and reactions. Emulsions-emulsifiers. Lipid changes in food, lipolysis, autoxidation of lipids, thermal degradation. Processed fats and refined oils chemistry. Lipid function and effect on the organoleptic characteristics of food (flavour, taste, odour). Physiological activity of lipids.
- Amino acids, peptides, protein: Physical and chemical properties, protein denaturation. Functional properties of proteins (water holding capacity, solubility, viscosity, gel forming and foaming ability, emulsification, viscoelastic properties of gluten, interaction on flavour and aroma compounds). Dietary properties of protein. Chemical and enzymatic modification of protein. Changes of protein during food processing and food preservation.

Laboratory exercises:

- Determination and adjustment of sugar concentration in food and wine
- Monitoring, estimation and adjustment of food and wine acidity
- Wine clarification using proteins
- Addition, monitoring and adjustment of SO_2
- Determination of free, total and bound sulphites
- Emulsions-Emulsifiers
- Lipid extraction and estimation using the Mojonnier method
- Non-enzymatic browning: Maillard reaction

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	***Semester workload***
Lectures	78
Laboratory exercise	26
Total contact hours and training	***104***

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.*	Evaluation procedure performed in Greek Evaluation procedures: Written evaluation in questions of scaling difficulty • Two examination tests are performed in-between semester • Final examination The final grade is determined by the following formula: 40% of laboratory exercise grade and 60% of theory examination grade.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Belitz H. – D., Grosch W., Schieberle P., Food Chemistry, 2011 *(In Greek)*.
- Boskou, D., Food Chemistry, 2007 *(In Greek)*.
- Sflomos, K., Food Chemistry and Nutrition facts, Volume 1, 2011 *(In Greek)*.
- Galanopoulou, K., Zabetakis, G., Mavri-Vavayianni, M., Siafaka, A., Nutrion and Food Chemistry, 2007 *(In Greek)*.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD CHEMISTRY			
10	1	1%	1%
9	12	9%	10%
8	18	13%	23%
7	27	20%	43%
6	77	57%	100%
	135	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST403**	**SEMESTER**	4
COURSE TITLE	**FOOD BIOTECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	2	
Total	4	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in Greek and English
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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*

Food Biotechnology is an interdisciplinary subject combining the sciences of microbial biotechnology, fermentation technology and the development of bioprocesses.

The aim of Food Biotechnology course is to introduce concepts related to microbial and enzymatic processes and the role of microorganisms in food production. Students will be educated on issues related to microbial cultures, production and recovery of metabolic products and their application in food.

Upon successful completion of the course students will have knowledge to:

- Describe the role of microorganisms and enzymes in Fermentation Technology

- Describe the different types of fermentations
- Outline the various applications of enzymes and other biotechnology-derived products in the food industry
- Explain the basic metabolic pathways of microorganisms
- Select microorganisms for the targeted production of biotechnological products and/or food additives
- Describe the recovery methods of biotechnological products
- describe different methods of recovery of biotechnological products
- use scientific equipment to apply techniques for the recovery of biotechnological products
- Calculate the results of the fermentation process (concentration of metabolic products produced, consumption of the substrate, etc.)
- Evaluate and assess the results of fermentation, considering the metabolism of the micro-organisms, the growth conditions

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Team work
- Decision-making
- Working in an interdisciplinary environment

SYLLABUS

- Introduction and importance of biotechnology in food production
- Microbial metabolism. Metabolic pathways involved in the microbial production of compounds
- Microorganisms used in Food Biotechnology
- Biotechnological production of enzymes
- Biotechnological production of single cell protein
- Biotechnological production of organic acids
- Biotechnological production of microbial oil
- Biotechnological production of carotenoids
- Biotechnological production of biopolymers
- Recovery of biotechnological products
- Food Biotechnology in bread, malting and brewing process
- Food Biotechnology in the production of table olives and vinegar
- Food Biotechnology in mushroom cultivation

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing Laboratory education, Problem solving
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.*	**Final written examination (in theory and in laboratory) that includes:** -multiple choice questions -short answer questions -judgment questions -problem solving

Activity	***Semester workload***
Lectures	78
Laboratory practice	26
Total contact hours and training	***104***

ATTACHED BIBLIOGRAPHY

1. Microbiology and Microbial Technology (2007). Aggelis G. Stamoulis Press
2. Bioprocess Engineering – Basic Concepts (2005). Shuler M. –Kargi F. NTUA Press.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD BIOTECHNOLOGY			
10	16	10%	10%
9	36	23%	33%
8	35	22%	55%
7	41	26%	81%
6	31	19%	100%
	159	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST404**	**SEMESTER**	4
COURSE TITLE	**FOOD PROCESSING II**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	3	
Total	5	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in Greek
COURSE WEBSITE (URL)	

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 of **Food Processing II** falls under the issues of food drying, condensation, extraction, extrusion and microbial or enzymatic bio-conversion, among other methods.

Food Processing II course aims to educate students on the physical and chemical changes occur during food processing, the principles and methodologies to perform drying extraction, condensation, extrusion, bio-conversion, irradiation of foods. Also, advanced food processing methods are explained.

Upon successful completion of the course students will have knowledge to:

- Describe the physicochemical changes of foods
- Identify and select the most suitable method and instrument for food processing

- Select the appropriate methodology to perform food processing
- Calculate the parameters that affect food processing

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Team work
- Decision-making
- Solving problems

SYLLABUS

Theoretical part

- Physical properties of foods. Glass transition. Water activity.
- Drying and dehydration processing technology.
- Drying and dehydration processing methods.
- Extraction processes. Conventional and un-conventional.
- Condensation. Evaporation. Membrane processing.
- Extrusion processing methods.
- High Pressure processing technology.
- Food irradiation process. Ultraviolet. Microwave. Infrared. Ultrasonics.
- Fermentation processing methods. Biotransformation of foods.
- Food additives. Preservation using salt and sugar. Edible coating.
- Advanced food processing methods. Pulsed electric fields. Ohmic heating etc.

Laboratory practice

1. Water activity I.
2. Water activity II.
3. Condensation.
4. Drying I. Pretreatment of foods prior to drying. Hot-air drying. Sun-drying. Drying kinetics.
5. Drying II. Freeze-drying.
6. Fermentation I. lactic acid fermentation. Fermented pickle production.
7. Fermentation II. lactic acid fermentation. Determination of pH, acidity. Preservation of fermented pickles.
8. Food additives. Salt and sugar as additives.
9. Food irradiation process
10. Novel non -thermal processing methods.
11. Multi-barrier technology.

TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>In teaching class</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Power point presentation, Whiteboard writing, solving problems

Laboratory practice</td></tr>
<tr><td>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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>78</td></tr>
<tr><td>Laboratory practice</td><td>39</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Total contact hours and training</td><td>117</td></tr>
</table>
</td></tr>
<tr><td>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.</td><td>Final written examination in theory and in laboratory that includes:

-multiple choice questions

-short answer questions

-judgment questions

-problem solving

-presentation</td></tr>
</table>

ATTACHED BIBLIOGRAPHY

(1) Conventional and advanced Food Processing Technologies (2015). S. Bhattacharya, (Ed.). John Willey & Sons, Ltd. UK.

(2) Food Processing 2 (2016). 2nd Edition, E. S. Lazos, A. E. Lazou, Papazisis Press, Athens.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD PROCESSING			
10	13	8%	8%
9	16	10%	19%
8	22	14%	33%
7	50	32%	65%
6	54	35%	100%
	155	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST405**	**SEMESTER**	4
COURSE TITLE	**PRINCIPLES OF CROP PRODUCTION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	Special Background, skills developmet
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Understand the basic principles that govern the natural environment
- Understand the basic principles of the rural environment
- Approach basic issues of plant-environment interaction
- Identify basic issues of plant cultivation
- Approach basic plant protection issues
- Describe the main cultivation systems
- Elaborate and correlate crop performance with the environment and plant growth conditions

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

General skills

- Adaptation to new situations.
- Decision making.
- Autonomous work.
- Teamwork
- Exercise criticism and self-criticism.
- Promotion of free, creative and inductive thinking.
- Search, analysis and synthesis of data and information, in order to implement theory in practice

SYLLABUS

Agriculture and its evolution, Classification, autonomy and morphology of large cultivated plants, Growth, growth and yield of crops, Environment and plant growth, Seed and sowing, Cultivation systems, Harvesting and storage of large crop seeds, Basics meteorological data, Basic plant protection elements, Main enemies and diseases Problems from the use of pesticides and personal protection measures

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	*Semester workload*
Lectures	117

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*	Total contact hours and training	***117***

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.*	Evaluation procedure performed in Greek. Written examination in matters of graded difficulty, which include a) text development, b) comprehension questions.

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
PRINCIPLES OF CROP PRODUCTION			
10	14	9%	9%
9	23	14%	23%
8	25	15%	38%
7	57	35%	73%
6	45	27%	100%
	164	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST501**	**SEMESTER**	5
COURSE TITLE	**FRUIT AND VEGETABLE SCIENCE AND TECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory exercises	2	
Total	4	6
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*	Special Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 student will be able to:

- classify fruits and vegetables into different categories
- describe the factors affecting the transport and storage of fruit and vegetables
- distinguish the different methods of fruit and vegetables processing
- perform the techniques related to analysis and processing of fruit and vegetables
- Carry out quality control techniques for raw materials and their products
- Evaluate the factors affecting the quality of processed fruit and vegetables

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

LECTURE TOPICS:

Production-morphology-classification of fruits and vegetables, preservation of fruits and vegetables - environmental and biological factors that affect the preservation of fruits - vegetables after harvest. Chemical composition - relationship of ingredients with nutritional value, fruits suitable for processing, factors that affect the fruits. Cooling methods of fruits and vegetables, the freezing process and its effect on plant tissues. Tomato processing technology, vegetable processing technology, fruit processing technology, fruit juice technology. Quality control of raw materials and finished products, products with added sugar, product alterations.

LABORATORY TOPICS

1. Canning. Syrups-Salts
2. Peeling - Scaling
3. Preparation and control of canned fruits - canned vegetables
4. Check canned peaches.
5. Fruit - vegetable content of acids, soluble solids and vitamin C.
6. Jellies. Making jam. Quality evaluation of gels - jams.
7. Tomato paste control and processing.
8. Preparation of ketchup
9. Quality evaluation of fruit juices
10. Quality evaluation of frozen peas
11. Effect of freezing speed on the quality characteristics of fruits and vegetables.
12. Quality control of canned fruits - vegetables. Dehydration of fruits

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	***Semester workload***
Lectures	78
Laboratory	26
Total contact hours and training	***104***

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.*	Evaluation procedure performed in Greek. Written Evaluation

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

BOOK [22665]: Βιολογία και τεχνολογία των οπωροκηπευτικών μετά τη συγκομιδή, Καραουλάνης Γεώργιος Δ.

2.BOOK [3498]: Τεχνολογία & Ποιότητα Φρούτων & Λαχανικών, Άννα Αναγνωστοπούλου - Αικατερίνη Ταλέλλη

3.BOOK [17525]: Στοιχεία τεχνολογίας, μεταποίησης και συσκευασίας τροφίμων, Αρβανιτογιάννης Ιωάννης Σ.,Μποσνέα Λουλούδα Α.

4.BOOK [23027]: Τεχνολογία επεξεργασίας οπωροκηπευτικών, Καραουλάνης Γεώργιος Δ.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FRUITS & VEGETABLES SCIENCE AND TECHNOLOGY			
6	81	60%	60%
7	19	14%	74%
8	20	15%	88%
9	12	9%	97%
10	4	3%	100%
	136	100%	

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURCE UNIT CODE	**FST502**	**SEMESTER**	**5**
COURCE TITLE	**FAT AND OILS SCIENCE AND TECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	2	
Tutoring	---	
Laboratory	2	
Total	**4**	**6**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	*Scientific expertise, Skills Development*
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators 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 provide students with the necessary general and specific knowledge required to master the science and technology of fatty substances. Special attention is paid to the technology, quality, and evaluation of olive oil as well as quality control and spoilage of fatty substances.

Specifically, the course addresses the concepts required to comprehend the science and technology of fatty substances so that graduates can manage quality control laboratories as well as design, organize and manage production in the fatty substance industry, design new products, and troubleshoot technical problems related to production, transport, and preservation of products. In the lab, students are trained in the methodologies that enable them to apply analytical techniques for quality control of fatty substances, detect adulteration, and evaluate oilseeds used as raw materials in the production of fatty substances.

After completing this course, students must be able to:

- Design, organize and manage production in the fatty substance industry
- Apply analytical techniques for quality control of fatty substances
- Identify fatty substances and detect adulteration
- Research and troubleshoot technical problems of the fatty substance industry related to production, transport, and preservation of products

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)
…….

- Individual/Independent work
- Group/Team work
- Decision-making
- *Working in an international environment*
- Project planning and management
- Respect for the natural environment
- Researching, analyzing, and synthesizing data and information with the use of suitable technologies

COURSE CONTENT

Theory

1. Structure of fatty substances, determination of physical properties.
2. Categories of fatty substances.
3. Vegetable fats and oils, animal fats, fish oils. Extraction of vegetable and animal fats.
4. Processing of fats and oils, production methods for butter and margarines.
5. Olive oil. Qualitative characteristics of olives, composition of olive fruit, formation of olive oil, chemical composition of olive oil, cultivation practices and factors that contribute to the development of flavor and taste.
6. Harvest and post harvest processing of olive fruit, table olives and olive paste.
7. Extraction of olive oil; types of olive mills, olive mill by-products, storage and grading of olive oil.
8. Factors affecting olive oil quality; qualitative criteria and grades, tasting and sensory evaluation of olive oil and other fats and oils.
9. Spoilage of fatty substances, antioxidants.
10. Techniques for determining oxidative resilience, quality control and determination of constants and constituents of fatty substances; detection of adulteration.
11. Chemical and physical processes for the refinement of olive oil, oilseed oil, and olive pomace oil. Refinement of fatty substances, new technologies, hydrogenation of fatty substances.
12. By-products of olive mills and other industries of fatty substances, utilization of by-products, soap and saponification.

Laboratory

1. Fatty substance production; extraction, determination of physical properties, density; refraction index.
2. Saponification number of fatty substances, determination of unsaponifiable constituents.
3. Determination of free fatty acids (acidity); neutralization of free fatty acids.
4. Determination of foreign matter in fatty substances, determination of moisture content.
5. Iodine number; determination of degree of saturation of fatty substances.
6. Determination of oxidation state of fatty substances; determination of peroxide value; Kreis reaction.
7. Spectrophotometry in UV wavelengths.
8. Detection of foreign constituents in olive oil with the Synodinos Constas method; detection of oilseed oil via the Bellier reaction.
9. Refining, removal of resins, color and margarine.
10. Detection and determination of soap in fatty substances; testing for neutralization effectiveness.
11. HPLC analyses.
12. Soap making, emulsions.

TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Face-to-face, in-class lecturing, at the field part of lab work
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Power point presentation, Whiteboard writing, Communication with students through e-class and e-mails

OURSE DESIGN

Description of teaching techniques, practices and methods:

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.

The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.

Activity/Method	*Semester workload*
Lectures	60
In class lab work	26
Autonomous lab work	18
Total contact hours and training	***104***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS

Detailed description of the evaluation procedures:

Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.

Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.

Theory: Final written examination that includes:

-multiple choice questions

-fill-in the blanks questions

-short answer questions

Laboratory:

75% from final written examination in laboratory that includes:

-fill-in the blanks questions

-short answer questions

-multiple choice questions

25% from lab reports

SUGGESTED READING:

Books

1. Kiritsakis, A., and Shahidi, F. (2017) Olives and Olive Oil as Functional Foods Bioactivity, Chemistry and Processing. John Wiley & Sons Ltd, Oxford UK.
2. Hamilton, R.J., and A. Bhati, A. (1987). Recent Advances in Chemistry and Technology of Fats and Oils. Elsevier Applied Science, London.
3. Bockisch M. (1998). Fats and Oils Handbook. Academic Press and AOCS Press, Urbana, IL.
4. O'Brien, R.D. (2009). Fats and Oils:Formulating andProcessing for Applications.3rd ed.CRC Press, Boca Raton, FL.
5. Bongers, P. and C. Almeida-Rivera (2011). Dynamic Modelling of the Margarine Production Process. Computer-Aided Chemical Engineering 29:1301–1305.
6. Hiramatsu, M. (1997). Food and Free Radicals. Springer, New York.
7. Roller, S. and S. A. Jones (1996). Handbook of Fat Replacers. CRC Press, Boca Raton, FL.

Scientific Journals

- Food Research International
- Food Chemistry
- Analytical Letters
- Analytical and Bioanalytical Chemistry
- Journal of Food Composition and Analysis
- Foods
- Antioxidants

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
SCIENCE AND TECHNOLOGY OF FATS & OILS			
10	1	1%	1%
9	13	11%	11%
8	20	16%	28%
7	49	40%	67%
6	40	33%	100%
	123	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDREGRADUATE		
COURSE CODE	**FST503**	**SEMESTER**	5
COURSE TITLE	**MILK AND MILK PRODUCTS SCIENCE AND TECHNOLOGY**		

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	2	
Laboratory exercise	2	
Total	4	6
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*	Specialized general knowledge
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	

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 student will be able to:

- Know and describe the composition of milk and the changes that occur in milk and its components during processing
- Determine the factors that affect milk and dairy products during the production stage
- Outline the physical properties of milk
- Understand the process of converting milk into its various products.
- Perform the necessary chemical and other analyzes on the raw and auxiliary materials and on the final products.
- Learn hygiene issues, nutritional value, packaging, safety and quality assurance.
- Acquire knowledge for the production and evaluation of various dairy products.

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 Working in an international environment Working in an interdisciplinary environment Production of new research ideas	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 …… Others… …….

1. Adapting to new situations
2. Decision-making
3. Working independently
4. Team work
5. Criticism and self-criticism
6. Production of free, creative and inductive thinking
7. Search for, analysis and synthesis of data and information, with the use of the necessary technology

(1) SYLLABUS

SYLLABUS

Content of theoretical course:

Structure - milk composition, production and utilization of milk, Factors that affect the composition and amount of milk, Antibiotics – Mastitis, Milk ingredients, Physical properties of milk (Organoleptic characteristics, acidity, pH, specific gravity, freezing point, redox potential, etc.), Nutritional value of milk, Milk treatments, Heat Treatments of milk, Production of milk on the farm, quality control of milk, Cheese, Yogurt, Sour milk, Kefir, Butter, Cream, Ice cream

Content of laboratory course:

Physicochemical characteristics of raw milk (pH, titrated acidity, indirect methods for assessing acidity, stability of fresh milk, specific gravity), Identification of main milk components, Checking the quality of raw milk, Check on standardization problems, Control of the degree of heat treatment of milk, Mech anism of coagulation of milk, Sensory evaluation of dairy products, Production of cheese, yogurt, butter, ice cream.

SYLLABUS

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching. Laboratory education. Communication with students via e-class, e-mail, etc.

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

Activity	*Semester workload*
Lectures	78
Laboratory practise	26
Total contact hours and training	*104*

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.

Language of evaluation: Greek
Methods of evaluation:
Progress work during the semester (formative)
Final examination (Concluding)
Theoretical part: multiple choice questionnaires, short-answer questions, open-ended questions, problem solving.
Laboratory part: multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, laboratory work. (20% laboratory work reports, 80% exams)
Final grade: 60% theoretical grade and 40% laboratory grade
The accessibility of students in criteria and final results is through website and/or e-class.

ATTACHED BIBLIOGRAPHY

- Mantis, I.A., Papageorgiou, K.D., Fletouris, I.D., Aggelidis, S.A. (2015). Hygiene and technology of milk and its products. Publication: Kyriakidis S.A.
- Kechagias, X., Tsakali, E. (2017). Science and technology of milk and dairy products. Publication: New Technologies
- Kaminarides, S., Moatsou, G. (2009). Milk. Publication: Embryo
- Varnam Alan H., Sutherland Jane P. (2008). Γάλα και προϊόντα γάλακτος. Εκδόσεις: Στέλλα Παρίκου & ΣΙΑ ΟΕ
- Tamine A. (2009) Milk Processing and Quality Management, Wiley-Blackwell
- Walstra, P., Walstra, P., Wouters, J.T.M., Geurts, T.J. (2005). Dairy Science and Technology, Second Edition. CRC Press
- Anil Kumar Puniya (2015). Fermented Milk and Dairy Products. CRC Press
- Robinson, R., Britz, T. (2008). Advanced Dairy Science and Technology. Wiley-Blackwell

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
SCIENCE AND TECHNOLOGY OF MILK & THEIR PRODUCTS			
10	9	16%	16%
9	18	32%	48%
8	17	30%	79%
7	6	11%	89%
6	6	11%	100%
	56	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST504**	**SEMESTER**	5
COURSE TITLE	**INDUSTRIAL FERMENTATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory exercise	2	
Total	4	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

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 the successful completion of the course, the student will be able:

- To acknowledge the metabolic activities and pathways that entail the formulation of fermentation products
- To be familiar with the utilisation of industrial microbial strains to generate food products
- To know the basic principles of applying microorganisms in food production (biomass, metabolites, fermented foods etc) in the food industry
- To know recent, up-to-date and automated methods of microbial growth assessment
- To know and understand the main types of bioreactors along with key principles of bioreactors operation
- To understand the principal categories of microbial fermentations

- To know the main industrial applications with respect to the utlisation of microorganisms to produce food products for the food industry sector
- To understand how to estimate key fermentation parameters and stoichiometric reactions.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part of the course:

The course of Industrial Fermentations describes the development of bioprocesses to generate fermentation products though the utilisation of microbial entities, that could be further applied in food industry. Moreover, the constantly emerging field of white biotechnology is also included, incorporating both traditional fermented foods (wine, beer, cheese production) and biotechnologically produced high added-value products (chemicals, platform chemicals, biopolymers etc). The aforementioned products can be further introduced in food manufacturing sector and similar industries, encompassing also the development of novel biorefinery concepts.

During the course, students are expected to understand the metabolic activities and the pathways that lead to the formation of fermentation products, to acknowledge the basic types and principles of bioreactors operation, the principal types of fermentation processes and strategies, to learn about the most significant applications of microbial entities to formulate products for the food industry, and understand the methods to estimate fermentation parameters and stoichiometric reactions.

Laboratory exercises:

- Determination of microbial concentration
- Microbial growth curve
- Estimation of specific growth rate (μ)
- Estimation of substrate consumption rates-Yield of biomass
- Solid state fermentation (SSF)
- Bacterial cellulose (BC) production

- Continuous fermentation to produce wine, beer or potable alcohol
- Chemostat
- Microorganisms immobilisation techniques
- Production of single cell protein (SCP)

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	***Semester workload***
Lectures	78
Laboratory exercise	26
Total contact hours and training	***104***

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.*	Evaluation procedure performed in Greek Evaluation procedures: Written evaluation in questions of scaling difficulty • Two examination tests are performed in-between semester • Final examination The final grade is determined by the following formula: 40% of laboratory exercise grade and 60% of theory examination grade.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Aggelis, G., Microbiology and Microbial Technology, 2007, Editions Stamoulis (In Greek)

Spiliotis V., Batrinou, A, Industrial microbiology, 2013, Editions Disigma (In Greek)

Nerantzis, E., Tataridis, P., Logothetis, S., Biotechnology and Industrial Fermentations, 2014, Editions Emvryo (In Greek)

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
INDUSTRIAL FERMENTATIONS			
10	1	1%	1%
9	7	5%	6%
8	24	18%	24%
7	27	20%	44%
6	74	56%	100%
	133	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST911**	**SEMESTER**	5
COURSE TITLE	**ENGLISH TERMINOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	Special Background/ Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (English/Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Interpret/translate foreign language (English-language) scientific texts
- Recognize and become familiar with the scientific terminology used in scientific papers and food science books written in English
- Use English scientific terms and write scientific texts in English
- Explain and communicate orally in English scientific topics in the field of food science

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Foreign language grammar. Vocabulary, use of words. Effective oral communication. Develop the ability to read, write and understand foreign language text at a high level. Systematic training and practice in the use of language on texts referring to food technology.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	117
Total contact hours and training	***117***

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.*	Written Evaluation

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Dorland's Ιατρικό Λεξικό Αγγλοελληνικό και Ελληνοαγγλικό, Κατούλης Α.

2. Αγγλοελληνικό & Ελληνοαγγλικό λεξικό βιολογικών και ιατρικών όρων, Θ. Παταργιάς, Κ. Σέκερης, Κ. Σέκερη, Λ. Μαργαρίτη.

3. ΕΛΛΗΝΟ-ΑΓΓΛΙΚΟ & ΑΓΓΛΟ-ΕΛΛΗΝΙΚΟ ΛΕΞΙΚΟ ΙΑΤΡ.ΚΑΙ ΒΙΟΛ.ΟΡΩΝ ΜΕ CD, ΦΟΥΝΤΑΣ Γ.ΒΓΕΝΟΠΟΥΛΟΥ Σ

4. Αγγλοελληνικό - Ελληνοαγγλικό Λεξικό Βιολογίας και Μοριακής Βιολογίας, Lackie - Dow.

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
ENGLISH TERMINOLOGY			
10	1	1%	1%
9	7	5%	6%
8	24	18%	24%
7	27	20%	44%
6	74	56%	100%
	133	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST912**	**SEMESTER**	**5**
COURSE TITLE	**VALORIZATION OF FOOD INDUSTRY BY-PRODUCTS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 provide knowledge on new food waste treatment technologies applied in the food industry. The utilization of food industry by-products contributes to the sustainable development through the reduction of the environmental pollution, approaching the requirement for ZERO WASTE but also the saving of raw materials.

Upon completion of the course students will:

- Understand and describe the basic principles in food industry waste treatment systems
- Classify the various types of treatment of industrial waste into physical, chemical and biological processes

- distinguish the appropriate treatment process for the different agri-food wastes
- Identify the tools and new technologies available in the systems for the treatment of industrial food waste by physico-chemical and biological processes

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Characteristics of agricultural, livestock waste and food industry waste. Environmental effects of untreated food wastes on soil, water and air. Pollution measurement parameters. Legislation on agricultural livestock waste and food industry waste. Conventional liquid and solid waste management systems as well as the reuse of their by-products. Case studies for the recovery and utilization of by-products derived from food industry waste as well as from agro-livestock activities through the recovery of beneficial components which can be used as food , cosmetics or pharmaceutical industry.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**

Use of ICT in teaching, laboratory education, communication with students	
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.*	Written examination on graded multiple choice difficulty plus a written project from food industry case study. Language Greek

Activity	***Semester workload***
Lectures	117
Total contact hours and training	***117***

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

• *Γκέκας Β., Μπαλτά Κ., Βιομηχανία Τροφίμων και Περιβάλλον, 2005*

.• *Κυρανάς Ε., Λειτουργικές Ιδιότητες Νερού, Πρωτεϊνών, Σακχάρων, Λιπιδίων & Φυσικών Χρωστικών, 2011.*

• *United Nations Environment Programme Industry and Environment (UNEP IE), (1995). Food processing and the environment. UNEP Industry and Environment 18(1).*

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
UTILIZATION OF FOOD INDUSTRY BY-PRODUCTS			
10	0	0%	0%
9	0	0%	0%
8	2	40%	40%
7	2	40%	80%
6	1	20%	100%
	5	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST913**	**SEMESTER**	5
COURSE TITLE	**FOOD HYGIENE**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	6
Total	3	6
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*	Specialized knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

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 aim of Food Hygiene course is for students to develop an understanding on the key elements of food safety and hygiene in Food Industry Units. It deals with hygienic handling of food and includes topics like personal hygiene and safety issues.

Upon successful completion of the course students will have expertise to:

Implement all actions necessary to maintain the food manufacturing infrastructure in a hygienic manner

- Proper infrastructure design to facilitate safe and wholesome food manufacture by preventing contamination
- Proper industrial and personal hygiene practices
- Hygienic maintenance, housekeeping, cleaning and disinfection

Safety in workplace

- Definition of work accident – occupational diseases
- Hazard categories, fire and explosions, noise, slips, trips, falls, etc.
- Methodology: HAZOP (hazard analysis & operability), FMEA (failure mode –effect analysis), FTA(fault tree analysis).

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Decision-making
- Solving problems
- Projects

SYLLABUS

Lectures

- Introduction to Food Hygiene – Basic Concepts and New Risk Metrics
- Food Hygiene Laws and Regulations: Codex Alimentarius, EU Food Regulations 178/2002, 852-854-2004, 2073/2005
- Food Hazards – Food Infection – Food Intoxication
- Biological – Chemical Hazards – Growth Limits of Pathogenic Microorganisms
- Infrastructure Design to Facilitate Safe and Wholesome Food Manufacture by Preventing Contamination
- Developing a HACCP plan – GMP – GHP – Food Industry Infrastructure
- HACCP Principles and Guidelines
- Safety in Workplace: Definition of Work Accident – Occupational Diseases - Hazard Categories, Fire and Explosions, Noise, Slips, Trips, Falls, etc.
- Risk Assessment: Basic Concepts/Definitions – Statistical Methodology

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing
TEACHING METHODS *The manner and methods of teaching are described in detail.*	***Activity*** | ***Semester workload*** Lectures | 117

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*		
	Total contact hours and training	***117***
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.*	**Final written examination in theory that includes:** -fill-in the blanks questions -short answer questions -multiple choice questions Midterm and final exams	

ATTACHED BIBLIOGRAPHY

7. Bibek Ray, Arun Bhunia (2013). Fundamental Food Microbiology, Fifth Edition. CRC Press
8. Martin R Adams, Maurice O Moss, Peter McClure (2016). Food Microbiology. Royal Society of Chemistry
9. Principles of Food Sanitation. 2018. Marriott. N., Schilling,W., Gravani, R.
10. Food Safety Handbook. 2003. Schmidt, R. and Rodrick, G.
11. Understanding The Codex Alimentarius by FAO and WHO

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST601**	**SEMESTER**	6
COURSE TITLE	**INSTRUMENTAL FOOD ANALYSIS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory practice	2	
Total	4	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in Greek
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 of **Instrumental Food Analysis** falls under the issues of organology and applications of instruments to perform chemical analysis of food.

The aim of Instrumental Food Analysis course is to educate students to identify the different methods of instrumental analysis of food, know the organology of instruments, select the appropriate method as well as to evaluation of the results obtained.

Upon successful completion of the course students will have knowledge to:

- Apply the methodologies for the proper pretreatment of samples prior to analysis.

- Select the most suitable technique for the food analysis to be performed.
- Use specialized equipment
- Perform instrumental analysis
- Collect and assess data and subsequently evaluate the results

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

1. Working independently
2. Team work
3. Decision-making
4. Solving problems

SYLLABUS

Introduction to instrumental Food Analysis. Classification of analyses. Statistical analysis of data
Sample preparation. Extraction methods.
Electroanalytical techniques. Potentiometry.
Introduction to chromatography
Gas chromatography
Liquid chromatography (HPLC, paper chromatography, TLC).
Introduction to Spectroscopy
Absorption Spectroscopy (Ultraviolet/Visible)
Fluorescence spectrometry
Atomic Absorption Spectroscopy
Infrared Spectroscopy, Raman
Nuclear Magnetic Resonance
Mass Spectrometry and Hyphenated Instruments
Practice in solving problems

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In teaching class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing, solving problems Laboratory practice
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	*Semester workload*
Lectures	78

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*	Laboratory practice	26
	Total contact hours and training	***104***
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.*	**Final written examination in theory and in laboratory that includes:** -multiple choice questions -short answer questions -judgment questions -problem solving	

5. ATTACHED BIBLIOGRAPHY

8. Principles of Instrumental Analysis. D. A. Skoog, F. James Holler, T. A. Nieman

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
INSTRUMENTAL FOOD ANALYSIS			
10	1	1%	1%
9	3	3%	4%
8	6	6%	9%
7	32	30%	40%
6	64	60%	100%
	106	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST602**	**SEMESTER**	6
COURSE TITLE	**PRINCIPLES OF ORGANIC PRODUCTION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Laboratory exercises	2	
Total	5	6
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*	Special Background, skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Understand the basic terms of organic farming production, organic product, agricultural raw material, product to be converted, etc.)
- Describe the goals of organic farming
- Apply the principles regarding the processing of organic products and animal feed
- Identify the production rules related to organic farming
- Consider the obligations and actions related to suspected non-compliance
- Be aware of precautions to avoid the presence of unapproved products and
- substances
- Know the main crops to which organic farming is applied

- Perform the main methods of plant protection and plant nutrition for biological agriculture

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

General skills

1. Adaptation to new situations.
2. Decision making.
3. Autonomous work.
4. Teamwork
5. Exercise criticism and self-criticism.
6. Promotion of free, creative and inductive thinking.
7. Search, analysis and synthesis of data and information, in order to implement theory in practice

SYLLABUS

Course content

Introduction, generally for organic farming. Historical background, movements for the biological Agriculture. Main laws on organic farming, development of its legislative framework organic farming. Objectives on organic farming, Propagating material in organic farming, National Organic Products Legislation, Control and Certification Bodies, Organic Products, Statistics of Organic Products of Plant and Animal Production, Plant description, seed description, Crop rotation and green manure, weed control, Co-cultivation of cereals with legumes, Sowing and growth of cereals and legumes with different sowing densities, Identification of beneficial insects

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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.*	

Activity	*Semester workload*
Lectures (theory)	117
Laboratory	26
Total contact hours and training	**143**

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.*	Evaluation procedure performed in Greek. Written examination in matters of graded difficulty, which include a) text development, b) comprehension questions.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
PRINCIPLES OF ORGANIC PRODUCTION			
10	1	1%	1%
9	3	3%	4%
8	6	6%	9%
7	32	30%	40%
6	64	60%	100%
	106	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST603**	**SEMESTER**	6
COURSE TITLE	**CEREALS AND CEREAL PRODUCTS SCIENCE AND TECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
	2	
Total	4	6
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*	Special Background/ Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Describe the characteristics, properties and composition of cereals
- Outline the technology for the manufacture of bakery products
- Develop methodologies for the production of bakery products
- Perform techniques for the analysis of bakery products
- Carry out quality checks necessary during the process
- Evaluate the quality characteristics of cereals and their products and relate them to the processing conditions

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Criticism and self-criticism
- Production of free, creative and inductive thinking
- Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

COURSE CONTENT

Theoretical Part of the Course

Cereals: General, importance, sampling methods and storage. Grain structure and composition. Dry grinding of cereals. Peeling of cereals. Wet milling of cereals. Various types of cereal foods. Wheat flour preparations. Pastry ingredients. Production of alcohol from cereals. Beer, whiskey. Principles and practices of quality control in raw materials in intermediates and final products. Quality characteristics, standards, evaluation.

Laboratory Part of the Course

1. Sampling, quality examination, processing, flour from various cereals.
2. Quality control of flours, types of flours, determination of moisture and ash in cereals and flours.
3. Sedimentation value test.
4. Determination of acidity and pH in flours.
5. Determination of quality and quantity of gluten.
6. Detection of improvers in flour. Peckar test, use of additives - additives in flour.
7. Evaluation of the fermentation capacity of flours with the effect of improvers and auxiliary bakery materials.
8. Making bread, cakes, cookies.
9. Methods of measuring the starch activity of flours.
10. Pasta quality control, pasta specifications.
11. Rice quality control - specifications

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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.*	Written Evaluation

Activity	*Semester workload*
Lectures	78
Laboratory	26
Total contact hours and training	**104**

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Μποσδίκος Δ., Τεχνολογία Αρτοποίησης, 2005.

2. Κεφαλάς Π., Τρόφιμα από Σιτηρά, 2009.

3. Παπακώστα Τασοπούλου Δ., Ειδική Γεωργία –Σιτηρά και Ψυχανθή, 2012.

4. Λάζος Ε., Λάζου Α., Επιστήμη & Τεχνολογία Σιτηρών, 2016

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
SCIENCE & TECHNOLOGY OF CEREALS AND THEIR PRODUCTS			
10	1	1%	1%
9	3	3%	4%
8	6	6%	9%
7	32	30%	40%
6	64	60%	100%
	106	100%	

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	*BACHELOR*		
COURCE UNIT CODE	**FST604**	**SEMESTER**	**6**
COURCE TITLE	**VITICULTURE AND VINE PRODUCTS**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	2	
Tutoring	---	
Laboratory	2	
Total	**4**	**6**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	*Scientific expertise, Skills Development*
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

The objective of this course is to familiarize students with the morphology, the physiological functions of the vine plant, and expose them to the basic principles of viticulture and basic cultivation techniques that are used in a production vineyard for high yield and high quality vine products. The course focuses on the methodology for establishing and running a modern production vineyard, techniques related to training, fruiting, and the annual vegetative cycle to produce wine grapes, table grapes, and

raisins. Special attention is paid to biotic and abiotic factors that control yield and especially the quality and uniqueness of vine products among various locales.

After completing this course, students must be able to:

- Comprehend the morphology and anatomy of the organs of the vine plant and their role in the production of vine products
- Describe the annual vegetative cycle, phenological stages and their physiological basis
- Understand the establishment of a production vineyard and the factors that affect it
- Outline the significance of pruning for training and fruiting and their utilization in viticultural practice
- Understand the significance of factors affecting *terroir* and the unique quality characteristics of various wines and other vine products

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)
…….

- Autonomous work and teamwork
- Decision making
- Working in a global context
- Project planning and management
- Respect for the natural environment
- Researching, analyzing, and synthesizing data and information with the use of suitable technologies

COURSE CONTENT
Theory

1. Introduction, historical background, viticulture in Greece and the world, grape varieties, cultivated areas and production of vine products, vine and wine products, Greek vineyards.
2. Vine morphology and anatomy.
3. Vine physiology; annual vegetative cycle.
4. Soil and climatic requirements.
5. Vineyard establishment (climate, soil, grape variety and rootstock selection, planning, planting a new vineyard, vine support systems), vineyard replanting; spatial layout; propagation.
6. Cultivation practices (irrigation, fertilization, management of natural vegetation, tillage, etc.).
7. Training and pruning.
8. Plant protection (diseases, viruses, pests, nutrient deficiencies, other factors affecting vine product quality).
9. Grape varieties; elements of ampelography.
10. Grapes (chemical composition, developmental stages, changes during maturation), must, harvest.
11. Organic viticulture and its special characteristics, its products and its prospects in Greece and the world.
12. Vine product quality schemes (Protected Designation of Origin, Protected Geographical Indication), vine product and wine *terroir.*

Laboratory

Laboratory exercises correspond to the teaching units of the theoretical part. Depending on the nature of the teaching unit, they involve field trips for the *in situ* observation of morphological characteristics (leaves, tendrils, buds, fruits, etc.), surveying physiological characteristics (photosynthesis, respiration, transpiration), phenological attributes (number of leaves, dissolved solids in must, phenolic substances, etc.), practical training in cultivation practices and methods in our experimental vineyard (e.g., budding and grafting, pruning, de-leafing, etc.), laboratory determinations (nutrient content of soil and tissues), observations related to vine health (e.g., disease and pest attacks) and their nutrition, case studies in contemporary topics and problems of the viticultural sector and its products.

TEACHING METHODS--ASSESSMENT

<table>
<tr><td>MODES OF DELIVERY
Face-to-face, in-class lecturing, distance teaching and distance learning etc.</td><td>Face-to-face, in-class lecturing, at the field part of lab work</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in teaching, Laboratory Education, Communication with students</td><td>Power point presentation, Video, Whiteboard writing, Communication with students through e-class and e-mails</td></tr>
<tr><td>OURSE DESIGN</td><td><table><tr><th>Activity/Method</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>60</td></tr><tr><td>In class lab work</td><td>22</td></tr></table></td></tr>
</table>

Description of teaching techniques, practices and methods: *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	Autonomous field lab work: 22 Total contact hours and training: ***104***
STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	**Theory:** Final written examination that includes: -multiple choice questions -fill-in the blanks questions -short answer questions **Laboratory:** 75% from final written examination in laboratory that includes: -fill-in the blanks questions -short answer questions -multiple choice questions 25% from lab reports

SUGGESTED READING:

Books

- Gerling C. (2015). Environmentally Sustainable Viticulture: Practices and Practicality. CRC Press, Boca Raton, FL.
- Gladstones J. S. (1992). Viticulture and Environment. Winetitles, Adelaide, Australia.
- Gladstones J. S. (2018). Wine, Terroir and Climate Change. Wakefield Press, Mile End, Australia.
- Johnson, H. and J. Robinson (2019). The World Atlas of Wine. 8th ed. Mitchell Beazley, London.
- Skelton, S. (2009). Viticulture: An Introduction to Commercial Grape Growing for Wine Production. Self-published, London.

Scientific Journals

- Vitis
- American Journal of Enology and Viticulture

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
VITICULTURE AND VINE PRODUCTS			
10	0	0%	0%
9	4	2%	2%
8	15	9%	12%
7	45	28%	39%
6	99	61%	100%
	163	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST921**	**SEMESTER**	6
COURSE TITLE	**FOOD ADDITIVES AND SWEETENERS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	6
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*	Special Background/ Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 aim of the course is to provide the necessary knowledge about the additives and natural and artificial sweeteners used in food.

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

- Identify and assort the types of sweeteners and additives used in the food industry
- Describe the importance of the use of sweeteners and additives in foods

- Identify the appropriate additive or sweetener for specific food applications

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

1. Adapting to new situations
2. Decision-making
3. Working independently
4. Team work
5. Criticism and self-criticism
6. Production of free, creative and inductive thinking
7. Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Additives: vitamins, amino acids, minerals, flavorings, flavor enhancers, sugar substitutes, sweeteners, food coloring, acids, bases, antimicrobials, antioxidants, complexing agents, complexing agents (complexing agents) Aggregates, thickeners, stabilizers, moisturizers, agglomerating additives, bleaching agents, clarifying agents, propellants, shielding gases. Sweeteners: Structural requirements, structure and sweetness relationship, synergy, sycarinic , stevioside, GymnemaSilvestre extract, osladin, phyllodulcine, glycyrrhizin, nitroanilines, dihydrohalcones, urea and guanidines, oximes, oxathiazine dioxide, dipeptide esters and amides, hernadhalacin.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	117
Total	**117**

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.*	Written Evaluation

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Κυρανάς Ε., Πρόσθετα Τροφίμων και Νομοθεσία, 2011.

2. H.-D. Belitz, W. Grosch, P. Schieberle, Χημεία Τροφίμων, 4η έκδοση, 2011

3. Λαμπρόπουλος Α., Ανέστης Σ., Γλυκαντικές Ουσίες, 2008.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD ADDITIVES AND SWEETENERS			
10	1	11%	11%
9	0	0%	11%
8	0	0%	11%
7	4	44%	56%
6	4	44%	100%
	9	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST922**	**SEMESTER**	6
COURSE TITLE	**ENZYMOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	6
Laboratory practice		
Total	3	6
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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek/English)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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*

Enzymology course is focused on enzymes as catalytic tools of various processes aiming to produce chemicals, food ingredients and are also involved in food production.

The aim of Enzymology course is to educate students on issues related to enzymes, the isolation and production techniques of enzymes, the enzymatic mechanisms, as well as on the methodologies for enzymes recovery, purification and application.

Upon successful completion of the course students will have knowledge to:

- describe the basic characteristics of enzymes and their role in catalysis

- classify the enzymes in categories
- elaborate on the reaction mechanisms
- outline the methodologies for isolation, recovery, purification and immobilization of enzymes.
- highlight the applications of enzymes in the food industry.
- Suggest several enzyme applications specifically in the Food Industry.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

- Working independently
- Team work
- Working in an interdisciplinary environment

SYLLABUS

1. Introduction and role of enzyme technology
2. Structure of enzymes. Enzyme categories.
3. Factors affecting enzymes.
4. Determination of enzymatic reactions. Definition of enzyme activity.
5. Mechanisms of enzymatic reactions.
6. Enzyme kinetics.
7. Origin of enzymes. Techniques for enzyme production, recovery and purification.
8. Techniques for enzyme immobilization
9. Applications of immobilized enzymes.
10. Enzyme applications in food industry (bread, brewing, fruit juice making)
11. Enzyme applications in food industry (oils and fats, lactose-free milk products, cheese making)
12. Novel enzyme applications in unconventional biocatalysis for the production of added-value chemicals.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentation, Whiteboard writing
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	*Semester workload*
Lectures	117

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*		
	Total contact hours and training	***117***
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.*	**Final written examination in theory that includes:** -multiple choice questions -short answer questions -judgment questions -problem solving	

ATTACHED BIBLIOGRAPHY

1. Enzymology (2007), Klonis I., EMBRIO Press
2. Enzyme Biotechnology (2020). Klonis I., 4th Edition. CUP Press
3. Enzymes in Food Technology (2002). Whitehurst R.J. and Law B.A. (eds). Sheffield Academic Press.
4. Handbook of Food Enzymology (2003). Whitaker J.R., Voragen A.G.J. and Wong D.W.S. (eds). Marcel Dekker, Inc.

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDREGRADUATE		
COURSE CODE	**FST923**	**SEMESTER**	6
COURSE TITLE	**FUNCTIONAL FOODS**		

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	3	
Total	3	6
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*	Specialized general knowledge
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (English/Greek)
COURSE WEBSITE (URL)	

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 student will be able to:

- To know the most important categories of functional foods
- To understand their role in disease prevention and health promotion
- To know the potential risks that lurk from their improper use
- To critically evaluate, analyze and discuss the scientific literature, the latest research developments on functional components
- To apply knowledge to develop new functional foods for the market
- To recognize the relevance of nutrition and health claims

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 Working in an international environment Working in an interdisciplinary environment Production of new research ideas	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 …… Others… …….

1. Adapting to new situations
2. Working independently
3. Team work
4. Criticism and self-criticism
5. Production of free, creative and inductive thinking
6. Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

- Relationship between nutrition and health: Introduction to the importance of nutrients with emphasis on the correlation of dietary patterns with the prevention of chronic diseases
- Introduction to Functional Foods: Definition, categorization, role. Safety studies, bioavailability and bioactivity.
- Functional Foods, Bioactive Ingredients and Health Promotion: An Analysis of categories and the most important cases of functional food, the legislative framework that governs them and the potential beneficial effects of the main bioactive ingredients (antioxidants, probiotics, fiber, fatty acids, phytosterols, peptides, etc.).
- Trends and perspectives: The role of functional foods in modern times, in weight control, in sports and in industry concepts of superfoods, novel foods, genetics modified foods and pesticides.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching. Communication with students via e-class, e-mail, etc.

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	*Semester workload*
Lectures	117

activity are given as well as the hours of non-directed study according to the principles of the ECTS		
	Total contact hours and training	*117*
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.*	• Presentations • Final exams	

ATTACHED BIBLIOGRAPHY

- Sflomos, K. (2019). Bioactive foods: Additives and Food Supplements. Publication: Tsotras Athanasios
- Koutelidakis, A. (2015). Functional Foods: Their role on health promotion. Ziti Publications (ISBN: 978-960-456-425-5).

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST701**	**SEMESTER**	**7**
COURSE TITLE	**FOOD TOXICOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
	2	
Total	4	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Identify toxic substances present in food as endogenous components , as exogenous factors from the environment, as products of interaction of ingredients in the preparation of food and as toxins of microorganisms
- Describe the processes of absorption, distribution, biotransformation. and excretion of toxic substances by the body.
- Understand the effect of toxic substances on the human body, the symptoms and ways of avoiding or preventing poisoning

- Apply modern methods of detection and identification of toxic substances

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

(1) Adapting to new situations
(2) Decision-making
(3) Working independently
(4) Team work
(5) Criticism and self-criticism
(6) Production of free, creative and inductive thinking
(7) Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part

Definition of food toxicology. Food safety assessment. Ways of action of toxic substances. Phases of toxic action. Effect dose ratio and effect time. Methods for detection and determination of toxic substances in food. Synergy and competition of toxic substances. Definition of ADI and NOEL. Toxicological tests. Ways of manifestation of poisoning. Toxicological role of the gastrointestinal tract. Toxins of microorganisms. Toxicity of food and natural ingredients of food. Interaction of drugs and food ingredients. Toxic substances from the environment. Toxic substances formed during the processing or preparation of food.

Laboratory part of the lesson

Introduction to laboratory food toxicology analyzes.
Methods of analysis / Acute toxicity tests.
Design of the basic parameters of the measurements.
Impact dose curves determination LD50 and EC50.
Determination of toxic substances in food

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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.*	Written examination on graded multiple choice difficulty plus a written project Language Greek

Activity	*Semester workload*
Lectures	78
Laboratory classes	26
Total contact hours and training	***104***

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

• Γιαγκίνης Κ., Καραντώνης Χ., Γκιαούρης Ε., Σταμάτιος Θ., Τοξικολογία Τροφίμων, 2016 Εκδόσεις ΖΗΤΗ

• Tu A.T.: Handbook of Natural Toxins, Colorado St. Univ., Marcel Dekker Inc., NY, 1992.

• Botsoglou N. and Fletouris D.: Drug residues in foods, Aristotle Univ. of Thessaloniki, Marcel Dekker Inc.,2000.

• Breneman C.J.: Handbook of food allergies. Marcel Dekker Inc., NY, 1986.• Hathcock H.J.: Nutritional toxicology (vol 1). London Academic Press, 1982.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD TOXICOLOGY			
10	4	12%	12%
9	7	21%	32%
8	9	26%	59%
7	10	29%	88%
6	4	12%	100%
	34	100%	

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDREGRADUATE		
COURSE CODE	**FST702**	**SEMESTER**	7
COURSE TITLE	**MEAT AND FISH PRODUCTS SCIENCE AND TECHNOLOGY**		

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	2	
Laboratory exercise	3	
Total	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*	Specialized general knowledge
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

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 student will be able to:

- Acknowledge the posthumous changes of meat and fish and on the treatments applied for their maintenance on the standardization and packaging of their products.
- Classify meat products, the choice of ingredients, the methods of preparation, the packaging, the maintenance of heat treatment and curing products, the prevention and the evaluation of defects causing quality degradation, in order to produce quality and healthy meat and fish products.
- Apply quality control methods of meat, fish and their products
- Get used to measurement and evaluation methods of main physicochemical characteristics of the quality of meat, fish and their products.
- Perform macroscopic and laboratory tests and to evaluate the quality based on them.

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 Respect for difference and multiculturalism Respect for the natural environment
Adapting to new situations	Showing social, professional and ethical responsibility and sensitivity to gender issues
Decision-making	Criticism and self-criticism
Working independently	Production of free, creative and inductive thinking ……
Team work	Others… …….
Working in an international environment Working in an interdisciplinary environment	
Production of new research ideas	

1. Adapting to new situations
2. Decision-making
3. Working independently
4. Team work
5. Criticism and self-criticism
6. Production of free, creative and inductive thinking
7. Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Content of theoretical course:

Meat – Poultry and their products. Structure and composition of meat tissues, Conversion of muscle tissue into meat, Nutritional value, Sensory characteristics, Preservation by refrigeration and freezing, Packaging, Classification of meat products, basic salting substances, ripening products, cold cuts. Pasteurized cold cuts and products from meat pieces.
Fish. Distinguish and classify, Composition of edible flesh, Safety and nutritional value, Preservation by refrigeration and freezing, Causes of deterioration, Assessment of freshness, Freezing methods, dehydration, salting and smoking, Canning.
Eggs. Structure and composition, Nutritional value, Quality evaluation, Properties, Egg products, Pasteurization, freezing, dehydration.

Content of laboratory course:

Meat – Poultry and their products. Sample preparation, Color measurements, pH and total acidity determination and evaluation, Moisture and ash determination, Distinction between fresh and frozen, Water retention capacity and water loss during cooking, Starch and NaCl determination, Fat determination, refractive index, Proteins, total nitrogen determination, Tenderness measurement.
Fish. Sampling, Biochemical and biological functions and quality of fresh, The role of the various components in determining its quality and processing capacity, Handling of fresh catches, Freezing curve, soluble protein determination, fat determination, Preservation with various treatments, Canning, canning quality control, identification of secondary oxidation products, Enzymatic tanning on crustaceans, Other products (surimi, fermented).
Preparation of cold cuts and salted fish.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching. Laboratory education. Communication with students via e-class, e-mail, etc.
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*	

Activity	*Semester workload*
Lectures	78
Laboratory practise	39
Total contact hours and training	*117*

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.*	Language of evaluation: Greek Methods of evaluation: Progress work during the semester (formative) Final examination (Concluding) Theoretical part: multiple choice questionnaires, short-answer questions, open-ended questions, problem solving. Laboratory part: multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, laboratory work. Final grade: 60% theoretical grade and 40% laboratory grade The accessibility of students in criteria and final results is through website and/or e-class.

ATTACHED BIBLIOGRAPHY

- Bremner H., A.2003. Safety and Quality Issues in Fish Processing. Woodhead Publishing Limited, UK.
- Cutting C., L. 1955. Fish saving; a history of fish processing from ancient to modern times. L. Hill, London.
- Hall G., M. 1997. Fish processing technology. Springer, N.Y..
- Pearson A., M and Dutson T., R. 1999. HACCP in Meat, Poultry and Fish Processing, Volume 10 of Advances in meat research, Springer, N.Y.
- Shahidi F., Jones Y. and Kitts D., D. 1997. Seafood safety, processing, and biotechnology, Technomic, USA.
- Georgakis, S.A., Vareltzis, K.P., Amvrosiadis, I.A. (2002). Technology of food from animal origin. Publication: Xristina and Basiliki Kordali S.A.
- Bloukas, I. (2017). Meat technology. Publication: UNIBOOKS IKE
- Ramantanis, S.B. (2005). Technology of meat and its products. Publication: Xristina and Basiliki Kordali S.A.
- Vareltzis, K.P. (1999). Quality control and technology of cathes. Publication: Maria Parikou & SIA

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
SCIENCE & TECHNOLOGY OF MEAT, FISH AND THEIR PRODUCTS			
10	20	8%	8%
9	34	14%	23%
8	58	24%	47%
7	76	32%	79%
6	51	21%	100%
	239	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST703**	**SEMESTER**	7
COURSE TITLE	**WINE AND ALCOHOLIC BEVERAGES SCIENCE AND TECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
	2	
Total	4	6
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*	Special Background/ Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

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 student will be able to:

- understand the technology of production of wines and other alcoholic beverages
- describe biochemical changes during the harvesting of raw materials and during wine production
- distinguish and perform white and red winemaking process
- carry out the analysis methods used in both the production process and the quality control.

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*	*Project planning and management* *Respect for difference and multiculturalism*

Decision-making *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

(1) Adapting to new situations
(2) Decision-making
(3) Working independently
(4) Team work
(5) Criticism and self-criticism
(6) Production of free, creative and inductive thinking
(7) Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical Part of the Course

Ripening and composition of grapes, white vinification, red vinification, production of rosé wines, sparkling wines, production of sweet wines, special vinification techniques. Wine microbiology: must and wine yeasts, lactic acid bacteria, acetate bacteria. Chemical composition of wine must: Aromatic ingredients, flavoring ingredients, phenolic ingredients. Changes and stabilization of wine: chemical and biological changes of grapes after its collection, oxidation and reduction effects of wine, use of sulfur dioxide in wine preservation, colloidal wine components, turbidity and precipitation of various compounds in wine, permitted oenological practices and treatments. Bottling. Hygiene of the winery. Technology and quality control of spirits (ouzo, brandy, brandy, vodka, whiskey, rum, liqueur).

Laboratory Part of the Course

1. Measurement of alcoholic strength with alcoholometer and diluent meter (use of tables).
2. Determination of sugar content in the must.
3. Determination of acidity and pH of the must.
4. Determination of pH, total and volatile acidity in wine.
5. Determination of ash in wine.
Determination of sulfite anhydride (free and total sulfite).
7. Modern chromatographic methods for the analysis of wine and spirits.
8. Enzymatic changes from the action of enzymes. Importance of the use of enzymes in vinification.
9. Use of selected doughs for the production of wines
10. Alcoholic fermentation - Physicochemical factors that affect the development of yeasts - process of alcoholic fermentation.
11. Problems of incomplete fermentations and ways of dealing with them.
12. Color determination

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	78
Laboratory experiments	26
Total contact hours and training	**104**

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.*	Written Evaluation

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Τσακίρης Α., Ποτογραφία, 2007

2. Σουφλερός Ε., Οίνος και αποστάγματα, 2000.

3. Τσακίρης Α., Οινολογία, από το σταφύλι στο κρασί, 2008.

4. ΣουφλερόςΕ., Οινολογία, Επιστήμη και Τεχνογνωσία, 2012.

5. Τζίτζη Μ., Κυπαρισσίου Π., Στοιχεία Οινολογίας, 2008.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
SCIENCE & TECHNOLOGY OF WINE AND SPIRITS			
10	4	12%	12%
9	7	21%	32%
8	9	26%	59%
7	10	29%	88%
6	4	12%	100%
	34	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST704**	**SEMESTER**	7
COURSE TITLE	**QUALITY ASSURANCE AND LEGISLATION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	
Total	3	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*	Special Background, skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course earning 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 student will be able to:

- Outline the concept of Quality and Food Safety
- Develop and apply HACCP systems and the meaning of Environmental Management Systems
- Understand the role of Certification Bodies and Accreditation Bodies
- Apply certification and accreditation procedures

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*	*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*

Team work *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Criticism and self-criticism* *Production of free, creative and inductive thinking* *.....* *Others...* *.....*

General skills

1. Adaptation to new situations.
2. Decision making.
3. Autonomous work.
4. Teamwork
5. Exercise criticism and self-criticism.
6. Promotion of free, creative and inductive thinking.
7. Search, analysis and synthesis of data and information, in order to implement theory in practice

SYLLABUS

Course content

Quality, Environmental Management Systems, HACCP System, Integrated Systems

Management, Quality Policy, Procedures, Document Control, Continuous improvement, Non Compliance, Internal Audit, Management Review

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	117
Total contact hours and training	**117**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	Evaluation procedure performed in Greek.

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.*	Written examination in matters of graded difficulty, which include a) text development, b) comprehension questions.

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
QUALITY ASSURANCE AND LEGISLATION			
10	10	8%	8%
9	5	4%	12%
8	22	17%	29%
7	28	22%	51%
6	63	49%	100%
	128	100%	

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURCE UNIT CODE	**FST931**	**SEMESTER**	**7**
COURCE TITLE	**SENIOR SEMINAR**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	3	

Total	**3**	**5**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	*Scientific expertise, Skills Development*
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes (In Greek/English)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators 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 train students in:

- Selecting and developing a topic
- Primary data collection or secondary data analysis from diverse information sources
- Synthesis of information and redaction of a report
- Oral presentation before an audience

After successfully completing the course, students must be able to:

- Comprehend the difference between a review paper and a research paper
- Plan the approach to a topic and organize the writing process
- Research and evaluate relevant and recent literature during the writing process
- Structure and organize a well-rounded report following scientific style

- Appreciate the principles of science ethics and integrity
- Manage citations and references systems
- Justify why the report advances knowledge in the respective discipline

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

1. Researching, analyzing, and synthesizing data and information with the use of suitable technologies
2. Decision making
3. Autonomous work
4. Teamwork
5. Exercising criticism and self-criticism
6. Promoting free, creative, and deductive reasoning

COURSE CONTENT

The lectures are comprised of several thematic units, such as: how to approach the topic under investigation, how to break down a topic into manageable components, how to formulate and argue research questions, how to research the literature, and how to evaluate and utilize literature sources. Additionally, students are briefed on the basic principles of communication, sampling, statistical concepts, and data analysis. Instructions are provided on the methodology and stages of writing, style and structure, how to organize data and present results in tables and graphs, how to manage citations and references. Finally, instructions are given on how to prepare a presentation, how to organize material for presentation and presentation techniques. The course concludes with instructions on how to compose a CV and prepare for an interview.

TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Face-to-face, in-class lecturing, at the field part of lab work
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Power point presentation, Whiteboard writing, Communication with students through e-class and e-mails
OURSE DESIGN *Description of teaching techniques, practices and methods:*	

Activity/Method	*Semester workload*
Lectures	39

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc. *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	Individual project	45
	Team project	33
	Total contact hours and training	***117***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	Theory: 50% Final written examination that includes: -multiple choice questions -fill-in the blanks questions -short answer questions Individual or group project: 50%

SUGGESTED READING:

- ASA, CSSA, and SSSA. (2020) Publications handbook and style manual. Available online at https://www.agronomy.org/files/publications/style/style-manual.pdf (verified 24 Jan. 2021).
- Bell, J. (2005) Doing your Research Project. 4th ed. McGraw-Hill, Maidenhead, England.
- Bush, V. (July 1945) As we may think. Atlantic Monthly. Available online at https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/ (verified 24 Jan. 2021).
- Connolly, D. (2000) A little history of the World Wide Web [Online]. Available at http://www.w3.org/History.html (verified 24 Jan. 2021).
- Ong, W. J. (2012) Orality and Literacy. Routledge, Oxon, United Kingdom.
- Tierney, E. (1998) 101 Ways to Better Communication, Kogan Page, London.
- Sterling, B. (February 1993). Short history of the internet. The Magazine of Fantasy and Science Fiction. Available online at http://www.usask.ca/art/a352/short.htm (verified 24 Jan. 2021).

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
REDACTION OF SCIENTIFIC REPORTS			
10	2	1%	1%
9	17	11%	12%
8	45	28%	40%
7	41	26%	66%
6	54	34%	100%
	159	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST932**	**SEMESTER**	**7**
COURSE TITLE	**BIOREFINERIES DEVELOPMENT**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	5
Total	3	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek/English)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course ;earning 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 the successful completion of the course, the student will be able:

- To design food biorefineries
- To understand and perform techno-economic evaluation studies on biorefinery development
- To comprehend the basic principles and the practical applications of LCA
- To acknowledge the selection of the appropriate methodology and processes for biomass refining
- To familiarise with the principal terms of circular economy and bio-economy
- To outline the primary downstream separation and purification methods

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

(1) Adapting to new situations
(2) Decision-making
(3) Working independently
(4) Team work
(5) Criticism and self-criticism
(6) Production of free, creative and inductive thinking
(7) Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Nowadays, biorefineries have emerged and developed in a similar manner to petroleum refineries. Renewable resources and particularly biomass, are employed as the onset feedstock in biorefinery processes. Agro-industrial waste and by-products streams, but also food waste constitute some of the most usual feedstock materials. Biorefineries target the generation of several products (chemicals, biopolymers, organic acids, antioxidants, biocolourants) to replace their conventional petroleum derived counterparts, within the transition from linear to circular economy and bio-economy. The course includes the presentation of novel approaches, employing chemical and biological processes, along with the implementation of optimising such processes, techno-economic assessment and life cycle assessment.

More specifically, during the lectures the following sections are covered:

- Renewable resources as feedstock materials
- Bioprocess design
- Pre-treatment technologies
- Downstream separation and purification methods
- Biorefinery design targeting multiple end products
- Types of biorefinery and examples
- Circular economy and bio-economy
- Introduction to techno-economic analysis
- Introduction to Life Cycle Assessment (LCA)

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	117
Total contact hours and training	***117***

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.*	Combined evaluation of writing examination (multiple-choice questionnaires, short-answer-questions) and written report-presentation.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Kamm, B., Gruber, P.R. and Kamm. M., **2010**. *Biorefineries-industrial processes and products: Status Quo and Future Directions*, Kamm, B., Gruber, P.R. and Kamm. M eds., Wiley VCH Verlag GmbH & Co. KGaA

Clark J., Deswarte F., **2015**. The biorefinery concept: an integrated approach. In "*Introduction to Chemicals from Biomass*", Clark J. and Deswarte F. eds., West Sussex, U.K.

SCHOOL	ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST933**	**SEMESTER**	7
COURSE TITLE	**FOOD QUALITY CONTROL AND SENSORY EVALUATION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	3	5
Laboratory		
Total	3	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

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 students will be able to:

- know the principles and methods of quality control of food and beverages.
- understand the general dimensions of quality that help determine the specific quality of a product.
- realize the need for continuous quality improvement.
- perceive the importance of quality and its benefit and that it is a matter of prevention and not inspection.
- recognize the potential food hazards along production processes and minimize food safety issues.
- be familiar with the methods of organoleptic examination.
- be familiar with the data analysis of the organoleptic evaluation.
- be familiar with modern methods applied in food quality control.

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

1. Adaptation to new situations.
2. Decision making.
3. Autonomous work.
4. Teamwork
5. Work in an international environment.
6. Exercise criticism and self-criticism.
7. Promote creative and inductive thinking.
8. Analyze and synthesize of data and information in order to apply the theory in practice.

SYLLABUS

The course focuses on teaching the basic principles of quality control and organoleptic evaluation of food. Course's target is to enable students to apply methods and systems necessary for the assurance of food quality and quality improvement, through the right approach into different food systems. Furthermore, the course aims to enable the student to understand the concept and the philosophy of quality control regarding food and beverage companies.

Basic tools for quality assessment through organoleptic evaluation are also presented. Modern technologies and applications for the detection of bacteria, fungi and toxins are being analyzed. Moreover, analysis of molecular techniques applied in food quality systems (i.g quantitative gene expression) is also introduced as an approach to assess quality within food production processes.

The course material aims to introduce students a) to the basic concepts of quality and organoleptic examination of food, b) how to deal with quality control systems, and c) to understand the methods and analysis of evaluation data.

The subjects of the course include chemical hazard analysis (i.g chemical residues and pesticides) and biological hazards related to food hygiene.

Factors that affect quality, safety, nutritional value and composition of food are also analyzed.

- Introduction to the principles of food quality control
- Quality theories: Food quality characteristics - Quality factors
- Solutions for quality control problems and quality improvement assays
- Introduction to food organoleptic evaluation
- Analysis of organoleptic food evaluation data
- Quality control - Methods of organoleptic control, organization of organoleptic tests
- Concept and Principles of the HACCP system

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of video projector and computer, Internet use
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.*	Final written examination in matters of graded difficulty, which include - development questions - multiple choice questions

Activity	***Semester workload***
Lectures	117
Laboratory	0
Total contact hours and training	***117***

ATTACHED BIBLIOGRAPHY

1. TSaknis I., Quality and safety of food and beverages. Tziola Publications 2018, ISBN: 9789604187812 *(in Greek).*
2. Tzia, K., Tsiapouris, A., Critical Control Point Hazard Analysis (HACCP) in the food industry, Papasotiriou Publications 1996, ISBN: 9789607510358 *(in Greek).*
3. Arvanitogiannis I., Barzakas T.X., Tzifa K., Food quality control. Stamoulis Publications 2008, ISBN: 9789603517443 *(in Greek).*
4. Karaoulanis G.D., Laboratory analysis and quality control in food Industries. Stamoulis Publications 2005, ISBN: 9789603516217 *(in Greek).*
5. Stevenson, K.E., Bernard, T., HACCP: A systematic approach to food safety. CTI
Publications 1999.
6. Early, R., Guide to Quality Management Systems for the Food Industry. Blackie Academic & Professional, Chapman & Hall, Glasgow 1995.
7. Codex Alimentarius Commission, Principles and Guidelines for the conduct of microbial risk assessment. CAC/GL-30 1999.

Related Literature:

- Amitava Mitra. 2008. Fundamentals of Quality Control and Improvement, 3rd edition. WILEY Publications.
- Herbert Stone and Joel L. Sidel. 2004. Sensory Evaluation Practices, 3rd edition. Academic Press Publications.

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURCE UNIT CODE	**FST934**	**SEMESTER**	**7**
COURCE TITLE	**SPECIAL TOPICS IN FOOD SCIENCE AND TECHNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	3	
Tutoring	---	
Laboratory	---	
Total	**3**	**5**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	General Knowledge Skills Development Scientific expertise
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek/English
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes (Greek/English)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

The objective of this course is to offer students the opportunity to delve into contemporary and cutting-edge topics as well as recent advances in Food Science and Technology.

After completing this course, students must be able to:

- perceive current trends in food science and technology, new achievements and "state-of-the-art" trens in Food Science and Technology
- Have a critical view on new concerns and new knowledge and argue on current issues in their science
- Assess the validity or reliability of information presented in the media about Food Science

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

1. Researching, analyzing, and synthesizing data and information with the use of suitable technologies
2. Working autonomously
3. Working in a global context
4. Generating new research ideas
5. Promoting free, creative, and deductive reasoning

COURSE CONTENT

The course comprises of lectures by Department Faculty on current research topics within their discipline or contemporary topics of their choice, lectures by professionals from the food industry, field trips to distinguished enterprises and food industries. The dynamic nature of the course mandates that it is updated annually with new topics that reflect scientific developments. Sample topics include: The food system; Consumer trends, factors affecting them and the role of Food Science; From field to plate; Pros and cons of organic food; Processed and packaged vs. raw and bulk; Sustainable use of natural resources; Local food vs. global marketing; Chemistry and functionality of food constituents; The relationship between composition/structure and functionality/nutritional value of food; The role of Food Scientists in developing new foods; Are harmful substances (e.g., *trans* fatty acids, acrylamide, oxidation products, allergens) more likely in processed/packaged food; The verdict on protein, fat, and sugar substitutes; Synthetic additives: detection, labeling, thresholds, licensed ingredients, national and international regulation; Functional and novel foods, nutraceuticals, natural health supplements, etc.: differences, standards, traditional and novel uses, risks and challenges; Food preservation and safety: toxins, impact of processing on quality; Biotechnology and nanotechnology in the food industry.

TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Face-to-face, in-class lecturing
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Power point presentation, Whiteboard writing, Communication with students through e-class and e-mails

Use of ICT in teaching, Laboratory Education, Communication with students	
OURSE DESIGN *Description of teaching techniques, practices and methods:* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	

Activity/Method	***Semester workload***
Lectures	72
Individual or team project	25
Seminars	20
Total contact hours and training	***117***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	60% final written examination that includes: -multiple choice questions -fill-in the blanks questions -short answer questions 30% individual or team project 10% in class participation (contribution to discussions, seminars, lectures)

SUGGESTED READING:

To be updated every semester.

FACULTY/SCHOOL	FACULTY OF ENVIRONMENT		
DEPARTMENT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDY	UNDERGRADUATE		
COURCE UNIT CODE	**FST801**	**SEMESTER**	**8**
COURCE TITLE	**SOIL MANAGEMENT AND FOOD QUALITY**		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS (ECTS)**
Lectures	2	
Tutoring	---	
Laboratory	2	
Total	**4**	**5**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	Scientific expertise Skills Development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION:	Greek/English
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes (English/Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

The course exposes the students to the concept of natural resources, the contemporary problems related to their management, and challenges faced by the food production and quality sector. In particular, the course analyzes the value of soil as a medium of food production and how to best manage it for the production of plentiful, quality products. Special attention is paid to the role of soil in shaping *terroir* and supporting quality schemes (Protected Designation of Origin and Protected Geographical Indication) for wine, olive oil, pulses, cheeses, etc.

Specifically, the course reviews introductory concepts required to understand soils; in the laboratory part, it reviews methods of soil management aiming to preserve fertility, so that each student has a broad understanding of processes and methods for the exploitation of soils and the production of plentiful, quality food.

Additionally, the course aims at exposing students to contemporary issues and threats related to natural resources and their interrelationships, encompassing a broad domain of supplementary knowledge to aid their comprehension; overpopulation, food demand, availability of natural resources and arable lands, support for food production systems, climate change, etc.

Therefore, the objective of this course to provide students with the knowledge required to study the soil as a natural resource of overarching importance for food production and quality. It examines the basic soil properties in order to: (a) train students how to evaluate the state and availability of soil resources in the context of increasing demand for production of plentiful, quality food, (b) comprehend the significance of soils for food production systems and food quality in the modern economy, and (c) enhance prospects for a distinguished professional occupation in the discipline.

After completing this course, students must be able to:

- Comprehend the basic soil properties and their significance for food production systems and food quality
- Know the tools and techniques for sustainable soil management for food production
- Apply laboratory methods to assess soil fertility and interpret analyses of soils and plant tissues aiming to evaluate the capacity of soils to produce quality food
- Redact and present opinions on the use and management of soils for the production of food crops, thus developing skills of written and oral communication of project results

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	*Project planning and management*
Adapting to new situations	*Respect for diversity and multiculturalism*
Decision-making	*Environmental awareness*
Individual/Independent work	*Social, professional and ethical responsibility and sensitivity to gender issues*
Group/Team work	*Critical thinking*
Working in an international environment	*Development of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Introduction of innovative research	*(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)*
	…….

1. Working autonomously
2. Teamwork
3. Interdisciplinary work
4. Decision making
5. Respect for the natural environment
6. Promoting free, creative, and deductive reasoning

COURSE CONTENT

THEORY

1. Introduction; soil as natural resource; soil functions; soil genesis; soil classification; present and future demands for plant nutrition and crop production in developed countries.
2. Sustainable soil management and food production and quality: farming systems; soil management and securing the production of plentiful, quality food.
3. Crop production and food availability; food security for an ever-growing global population; prospects for food production in developing countries; demands placed on the agricultural sector for food security; nutrients in production and consumptions cycles; problems and opportunities.
4. Soil physical properties. Structure; compression, mechanisms, consequences, preventive and corrective measures; soil water; soil atmosphere; wetland soils; natural and constructed wetlands.
5. Soil chemical properties. Soil pH; carbonates; soil colloids; cation exchange phenomena and their importance in soil management for securing fertility and food production.
6. Soil biological properties. Organic matter; global C cycle and climate change; biotechnological approach in soil management and food production; soil organisms and their ecology; influence of microorganisms on soil functions and sustainable soil management.
7. Soil fertility and crop productivity; the soil as the basis of crop production; soil nutrients and plant uptake; nutrition physiology; role, uptake, and mobility of essential nutrients in plants; deficiency and toxicity symptoms; root growth and nutrient uptake; efficient use of nutrients.
8. Dynamic of main nutrients in the soil; determination of available nutrients in soil and plants; sources of nutrients; fertilizers; soil amendments; inorganic fertilizers; organic fertilizers; mycorrhizae.
9. Macronutrients and micronutrients in soil and their management for food production; nutrient cycles; nutrient availability and influence on food production and quality.
10. The role of soil in shaping *terroir* and supporting quality schemes (Protected Designation of Origin and Protected Geographical Indication) for wine, olive oil, pulses, cheeses, etc.
11. Soil degradation; desertification; erosion, types, causes, consequences on food production and quality, assessment, measures for reduction, prevention, and restoration; problem soils, formation, categories, management and amelioration, possibilities for exploitation.
12. Soil pollution: types of pollutants, effects on the soil ecosystem, consequences for food production and quality; cleanup; restoration.
13. Modern technologies for soil management for food production: Remote sensing applications; land evaluation; damage assessment; monitoring and surveying tools; yield simulation models in primary food production.

LABORATORY

1. Sampling of soil and plant tissues; preparation of soil samples for analysis; drying; determination of water content of soils and plant tissues.
2. Symptoms, diagnosis and correction of nutrient imbalances; establishment of a small experiment for detecting symptoms and diagnosing nutritional problems.
3. Determination of soil color, texture, bulk density, specific gravity, and porosity.
4. Determination of total and active soil carbonate; soil reaction; pH determination; buffering capacity.
5. Determination of soil organic C and microbial biomass.
6. Determination of soil electrical conductivity, total soluble salts (Ca, Mg, K, Na, NO_3^-, Cl^-, SO_4^-, CO_3^-, HCO_3^-) and irrigation water; irrigation water quality.
7. Determination of exchangeable cations in soil, cation exchange capacity, base saturation.
8. Soil pollution; determination of heavy metals (Cd, Cr, Pb: extraction, recovery and analytical determination).
9. Incineration of plant tissues, extraction and recovery of samples for analysis.
10. Soil macronutrients: Determination of N in soil and plant tissues.
11. Soil macronutrients: Determination of plant extractable P in soil and P content in plant tissues via spectrophotometry.
12. Soil macronutrients: Determination of exchangeable K and K content in plant tissues via flame photometry; determination of Ca and Mg in plant tissues via atomic absorption spectrometry.
13. Soil micronutrients: Determination of Fe, Zn, Mn, Cu, and Mo in soil and plant tissues via atomic absorption spectrometry; determination of B in soil and plant tissues via spectrophotometry.

TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Face-to-face, in-class lecturing
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Power point presentation, Whiteboard writing, Communication with students through e-class and e-mails
OURSE DESIGN *Description of teaching techniques, practices and methods:* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	

Activity/Method	***Semester workload***
Theory (Lectures)	60
Individual or team project	26
Seminars	18
Total contact hours and training	***104***

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	**Theory:** Final written examination that includes: -multiple choice questions -fill-in the blanks questions -short answer questions **Laboratory:** 75% from final written examination in laboratory that includes: -fill-in the blanks questions -short answer questions -multiple choice questions 25% from lab reports

SUGGESTED READING:

- Ando, T., K. Fujita, T. Mae, H. Matsumoto, S. Mori, and J. Sekiya. (1997) Plant Nutrition for Sustainable Food Production and Environment. Proc. XIII Int'l Plant Nutrition Colloquium. Kluwer Academic Publishers, Doordrecht, The Netherlands.
- Benton, J., Jr. (2012) Plant Nutrition and Soil Fertility Manual. 2nd ed. CRC Press, Boca Raton, FL.
- Brady, N. C., and R. R. Well. (2008) The Nature and Properties of Soils. Prentice Hall/Pearson Education. Upper Saddle River, NJ.
- Dane, J. H. and G. C. Topp. (2002). Methods of Soil Analysis. Part 4. SSSA Book Series No. 5. Soil Science Society of America, Madison, WI.
- FAO, IFAD, UNICEF, WFP and WHO (2017) The State of Food Security and Nutrition in the World 2017; Building Resilience for Peace and Food Security. FAO, Rome.
- FAO (2017) The future of food and agriculture – Trends and challenges. FAO, Rome.
- Gliessman, S. R. (2006) Agroecology: The Ecology of Sustainable Food Systems. 2nd Edition. CRC Press, Boca Raton, FL.
- Klute, A. (1986) Methods of Soil Analysis. Part 1. Physical and Mineralogical Methods. Agron. Monogr. No 9. 2nd ed. ASA and SSSA, Madison, WI.
- Lal. R. and B. A. Stewart. (2011) World Soil Resources and Food Security. CRC Press, Boca Raton, FL.
- Lal. R., and B. A. Stewart. (2010) Food Security and Soil Quality. Advances in Soil Science. CRC Press, Boca Raton, FL.
- Marschner, H. (1995) Mineral Nutrition of Higher Plants. 2nd ed. Academic Press, San Diego, CA.
- Page A.L. (1982) Methods of Soil Analysis. Part 2. Chemical and Microbiological properties. Agron. Monogr. No 9 (2nd ed). ASA and SSSA, Madison, WI.
- Roy, R. N., A. Finck, G. J. Blair, and H. L. S. Tandon. (2006) Plant Nutrition for Food Security; A Guide for Integrated Nutrient Management. Fertilizer and Plant Nutrition Bulletin No 16. FAO, Rome.
- Troeh, F. R., G. A. Hobbs, and R. L. Donahue (2004) Soil and Water Conservation for Productivity and Environmental Protection. 4th ed. Prentice Hall, Upper Saddle River, NJ.
- Weaver, R. W., S. Angle, P. Bottomley, and D. Bezdiecek (1994). Methods of Soil Analysis. Part 2. SSSA Book Series No 5. Soil Science Society of America, Madison, WI.
- Westerman, R. L. (1990) Soil Testing and Plant Analysis. 3rd ed. SSSA, Madison, WI.
- World Bank (2007) From Agriculture to Nutrition: Pathways, Synergies and Outcomes. Report No. 40196-GLB. World Bank, Washington, DC.

Performance Statistics of the last 2years

Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class
SOIL MANAGEMENT AND FOOD QUALITY			
10	0	0%	0%
9	1	50%	50%
8	1	50%	100%
7	0	0%	100%
6	0	0%	100%
	2	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST802**	**SEMESTER**	**8**
COURSE TITLE	**FOOD PRODUCT DEVELOPMENT**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
Laboratory classes	2	
Total	4	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*	Specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 **aim of the course** is to introduce the current nutritional concepts that govern the design of new products and the trends in the food industry for the development of new products and also to gain knowledge of the relevant processes and decision making strategy of the industry by familiarizing students with basic principles and concepts related to research and development of new foods by selecting case studies of specialized products.

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

- Distinguish current nutritional trends that dictate new product design, food industry trends for new product development and their applications.
- Describe the basic principles related to research and development of new foods

- Apply strategies and processes for the development of new foods to meet the requirements of industry and consumers.
- Predict and modify the lify cycle of a product

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

(1) Adapting to new situations
(2) Decision-making
(3) Working independently
(4) Team work
(5) Criticism and self-criticism
(6) Production of free, creative and inductive thinking
(7) Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

Theoretical part

Theoretical views and applications for the development of new human food products. An overview of the principles and methods used in decision making for new product development, as well as for the design, manufacture, quality evaluation, standardization, marketing and advertising, market research and patenting of the new product. Legislative restrictions on ingredients, processing, packaging and labeling.

Laboratory part

SECTION 1st

- Necessity of New Food Development - Basic principles and concepts related to research and development of new products.
- Contemporary Nutritional Views.
- Consumer Requests
- Development strategies - new product development processes.
- Creating ideas for new products
- Factors influencing the development of new products in the food industry
- Environmental Constraints - Legislation
- Product Life Cycle - Life cycle management and forecasting

SECTION 2nd

- Modern food packaging technologies.

- Nutrition labeling - nutrition claims, legislation.
- Creating a food label, legislation.
- Special Markings

SECTION 3rd

- Students create innovative products, which were decided during the brainstorming process. • Label design of the product they created.
- Calculation of nutritional value of the product Tasting and rating by the students of the final product.
- Discussion of Results.

SECTION 4th

- Innovative foods
- Functional foods
- Organic food
- Genetically Modified Foods

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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*	

Activity	*Semester workload*
Lectures	78
Laboratory classes	26
Total contact hours and training	***104***

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.*	Theoretical part : Written examination on graded multiple choice difficulty plus a written project Language Greek Laboratory part: Laboratory exercises:20% Final written evaluation on Lab exer: 80%

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- *New Ingredients in food processing, edited by G. Linden And D. Dorient, (Woodhead Publishing Ltd), 1999, CRC Press (USA).*
- *Food Processing Handbook, edited by J.G. Brennan, 2006, Wiley-VCH (Germany).*
- *Developing New Food Products for a Changing Marketplace. Edited by AL Brody and JB Lord. CRC Press. 2000.*
- *Έρευνα & Ανάπτυξη νέων προϊόντων & Επιχειρηματικών Σχεδίων Έκδοση: 1/2017*

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
DEVELOPMENT OF NEW FOOD PRODUCTS			
10	3	3%	3%
9	16	15%	17%
8	31	28%	45%
7	35	32%	77%
6	25	23%	100%
	110	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**FST803**	**SEMESTER**	8
COURSE TITLE	**FOOD PACKAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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	2	
	2	
Total	4	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*	Special Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in Greek)
COURSE WEBSITE (URL)	

LEARNING OUTCOMES

Learning Outcomes

The course l earning 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 student will be able to:

- Classify the materials and the different forms of packaging
- Define the basic functions of food and beverage packaging
- Describe the impact of packaging on product safety, quality and preservation
- Carry out quality control on different food packaging

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

(1) Adapting to new situations
(2) Decision-making
(3) Working independently
(4) Team work
(5) Criticism and self-criticism
(6) Production of free, creative and inductive thinking
(7) Search for, analysis and synthesis of data and information, with the use of the necessary technology

SYLLABUS

LECTURE TOPICS

Definitions and functions of food packaging. Glass materials and packaging means. Metal materials and packaging media. Corrosion of metal packaging. Plastic materials and packaging media. Thermoplastic polymers for food packaging. Processing and molding of thermoplastic polymers. Edible or edible food packaging. Biologically based and biodegradable packaging materials. Permeability of polymers to gases and vapors. Paper packing. Filling, closing and sealing of food and beverage packaging. Packaging in a modified atmosphere. Aseptic treatment and packaging. Active and smart food packaging. Packaging for food heated in a microwave oven. Shelf life of packaged foods. Selection of packaging for representative types of food. Packaging - food interactions. Legislation on food packaging materials and media. Food packaging and environment. New developments in food packaging.

LABORATORY TOPICS

1. Quality control of the double seam of the cans.
2. Grade determination of tin in tinplate sheets. Measurement of the thickness and continuity of the coated lacquered sheets and the degree of resistance to acids and sulfides.
3. Check the closure of glass packaging materials
4. Study of breaking mechanisms of glass containers during the sterilization process due to thermal stress.
5. Quality control of aseptic packaging.
6. Packaging in a modified atmosphere
7. Permeability of plastic films to water vapor.
8. Determining the shelf life of food sensitive to moisture intake.
9. Identification of thermoplastic polymers by density test and combustion test.
10. Separation of layers of laminates and measurement of thickness of each layer.
11. Mechanical properties of plastics - measurement of parameters of mechanical strength of packaging materials.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Use of information technology on data collection and information, in teaching and communication. Communication with students via web, e-mail, e-class and online folder sharing options etc.**
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.*	Written examination on graded multiple choice difficulty plus a written project Language Greek

Activity	*Semester workload*
Lectures	78
Laboratory classes	26
Total contact hours and training	***104***

ATTACHED BIBLIOGRAPHY

1.BOOK [77106804]: Συσκευασία Τροφίμων, 2η Έκδοση, Παπαδάκης Σπυρίδων Ε.

2.BOOK [68403482]: Συσκευασία τροφίμων, Μπλούκας Ιωάννης Γ.

3.BOOK [17525]: Στοιχεία τεχνολογίας, μεταποίησης και συσκευασίας τροφίμων, Αρβανιτογιάννης Ιωάννης Σ.,Μποσνέα Λουλούδα Α..

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
FOOD PACKAGING			
10	0	0%	0%
9	3	4%	4%
8	4	6%	10%
7	10	14%	24%
6	54	76%	100%
	71	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**ΠΤΥΧ**	**SEMESTER**	8
COURSE TITLE	**FINAL PROJECT**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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**
Total		13
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*	Special Background, skills development
PREREQUISITE COURSES:	To undertake a thesis students must: • Be in the 8th semester of studies • Have successfully completed 2/3 of the courses in the curriculum • Have chosen/contacted the supervisor • Have decided on the topic of the thesis to be written
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek/English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek/English)
COURSE WEBSITE (URL)	

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*
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- *Guidelines for writing Learning Outcomes*

The **aim of the thesis** is to provide the student with the opportunity to select, elaborate, study, investigate, deepen and develop a topic consistent with the subject of his/her studies in order to foster the skill of independent work on the subject of his/her studies.

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

- Research valid information in the scientific literature
- Evaluate information that is relevant and useful for writing the thesis
- Implement analytical methods during the experimental stages of the thesis
- Problem solving when conducting measurements and engage in critical thinking
- Operate equipment directly related to the quantitative and qualitative evaluation of the physico-chemical and microbiological properties of food products
- Collect data and process them using computer programmes on a computer
- Work in a team spirit in cooperation with students and supervisors
- Perform writhing of high quality work on a computer

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

1. Adapting to new situations
2. Decision-making
3. Working independently
4. Team work
5. Criticism and self-criticism
6. Production of free, creative and inductive thinking
7. Search for, analysis and synthesis of data and information, with the use of the necessary technology

PROCEDURE

1. Students get in touch with the professor of their choice and explore the possibility of supervising a topic of common interest in order to conduct a dissertation.

2. Then the supervising Professor submits to the Secretariat a form for the beginning of the dissertation defining the subject of the thesis.

3. The dissertation is usually individual. However, it can be assigned to a group of up to (2) students.

4. The dissertation must be completed within one academic semester. The above period may be extended upon the relevant

request of the student and the consent of the General Assembly of the Department.

5. After the completion of the thesis and at least 10 days before the date of the presentation of the thesis, they submit a joint application for the presentation-examination of the thesis by a three-member committee. The three-member committee consists of the supervising professor and two other members of the Department's teaching staff.

6. At the same time the student sends his final thesis to the three-member committee for evaluation

7. The presentation-examination of the diploma lasts 20-25 minutes and is followed by comprehension questions and discussion on the topic.

8. The presentation of the thesis is open to attendance by the academic community.

9. The presentation of the dissertation is made during the hole academic year except for the examination periods.

10. Detailed instructions for writing a thesis should follow what is mentioned in the thesis writing guide of the Department, while for convenience regarding the structure and formatting, a standardized thesis template is available at the link https://fst.ionio.gr/gr/students/ thesis /

Performance Statistics of the last 2years			
Grade (descending order)	**absolute frequency**	**relative frequency %**	**sum of success rates per class**
THESIS			
10	19	38%	38%
9	18	36%	74%
8	9	18%	92%
7	4	8%	100%
6	0	0%	100%
	50	100%	

SCHOOL	FACULTY OF ENVIRONMENT		
ACADEMIC UNIT	FOOD SCIENCE AND TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**ΠΡΑΚΤ**	**SEMESTER**	8
COURSE TITLE	**Traineeship**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, 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**
Total	2	2
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*	Special Background, skills development
PREREQUISITE COURSES:	Students are allowed to perform the 2-month internship under the following prerequisites: (a) To have enrolled in the 6th or higher semester of their studies (Exceptions apply in the event that the internship will be carried out abroad, via Erasmus+ whereby the application can be submitted in the 5th semester) (b) To have successfully passed at least 50% of the total courses of the initial six (6) semesters of the curriculum, among them in seven (7) of the 14 specialization courses presented above: Food Processing I Food Analysis Food Microbiology Food Engineering Food Chemistry Food Biotechnology Food Processing II Fruits and Vegetables Science and Technology Fat and Oils Science and Technology Milk and Milk Products Science and Technology Industrial Fermentations Instrumental Food Analysis Cereals and Cereal Products Science and Technology Elective course from groups A, B or C For more information please visit the website: https://fst.ionio.gr/en/students/internships/

LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek/English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek/English)
COURSE WEBSITE (URL)	

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*
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- *Guidelines for writing Learning Outcomes*

Upon the successful completion of the 2-month internship, students will be able to:

- Develop cooperation and teamwork skills through cooperation with other staff of the employment agency
- Apply at a professional level all the tools and techniques learned during his/her studies
- Understand the rules and principles governing a working environment
- Develop/improve his/her professionalism
- Prepare for the professional environment

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* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*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* *.....* *Others...* *.....*

1. Adapting to new situations
2. Decision-making
3. Working independently
4. Criticism and self-criticism
5. Production of free, creative and inductive thinking
6. Search for, analysis and synthesis of data and information, with the use of the necessary technology
7. Project planning and management
8. Team work
9. Respect for difference and multiculturalism
10. Respect for the natural environment
11. Showing social, professional and ethical responsibility and sensitivity to gender issues
12. Criticism and self-criticism

Laboratory for Wine and Spirits Quality Control

The laboratory is equipped with state-of-the-art instruments for the analysis and quality control of wine and spirits. The laboratory conducts undergraduate courses as well as research to support and promote the wine sector in Greece.

The laboratory has the basic laboratory equipment (analytical scales, microscopes, pH-meters, incubation chambers, laboratory ovens, water baths, refrigerators, centrifuges, etc.), as well as specialized equipment for analysis of wine and spirits such as:

automatic must and wine analyzer (FTIR - UV / Vis),

automatic enzyme analyzer,

tartar stability meter,

sulfite measuring device,

laser diffraction particle size analyzer,

rapid extraction device,

lyophilization device,

spectrophotometric wine and spirits colorimeter,

UV / Vis spectrophotometer,

High Pressure Liquid Chromatography (HPLC),

Gas Chromatograph,

Mass Spectrometer (GC / MS)

Accumulator, etc.

Laboratory of Biological Plant Protection and Fruit and Vegetable Technology

The laboratory focuses on strategies for protection against pests and diseases of organically grown plants and their products from production to post-harvest preservation and storage.

Available laboratory equipment includes:

Vertical thread flow chamber,

Thermal/freeze pincubation chamber,

(PCR),

centrifuge,

pH-meter,

microscopy,

stereoscopes,

autoclave,

sterilization,

analytical scales,

lyophilization device,

water bath

Laboratory of Food Microbiology

The laboratory conducts research on pathogenic microorganisms, antimicrobial activity of plant bioactive molecules of plant origin, and isolation of important strains of microorganisms for food fermentation.

The laboratory is fully equipped and has:

GC-MS,

vertical thread flow chamber,

incubation chambers,

freezers, spiral plate,

gravimat,

water baths,

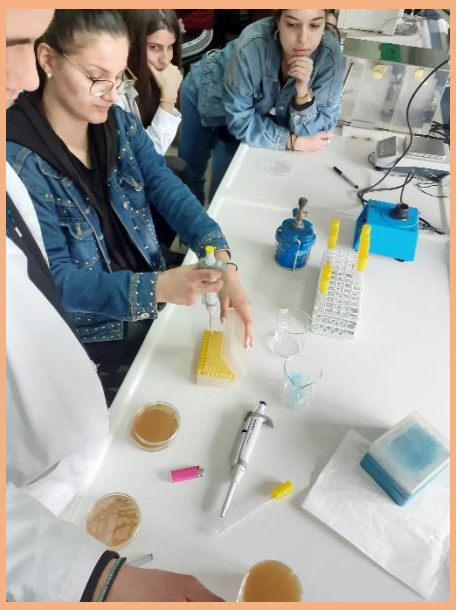
molecular imager,

microscope with electronic camera,

analytical scales,

thermal circulator,

vortex stirrers, etc.



Soil Laboratory

The laboratory activities focus on the effect of soil on food production and quality. Specifically, the laboratory (i) performs analyses of soils, plant tissues and products of crop production, irrigation water, soil conditioners, etc., (ii) provides consulting services and training to farmers, (iii) is active in soil classification and mapping, (iv) conducts research related to soil fertility and microbiology, plant nutrition and food production, and soil functions related to biodiversity and climate change.

The laboratory equipment includes: Ground samplers, analytical scales, vortex, shakers, centrifuges, incense burners, high temperature incense burners, incubation chambers, water baths, pH-meters, conductivity meter, Atomic absorption spectrophotometer, UV Vis spectrophotometer, Kjeldahl device, CNOH-S automatic analyzer etc.

Laboratory of Physiology and Aromatic Plants

The laboratory specializes in teaching and applied research related to plant physiology with emphasis on the in-vitro propagation of aromatic plants and the extraction, evaluation and utilization of their essential oils in food.

The laboratory is fully equipped with:

Photosynthesis measuring device, surface meter,

water distillation device,

GC-MS,

rotary evaporator,

analytical scales,

water baths,

plant growth chamber,

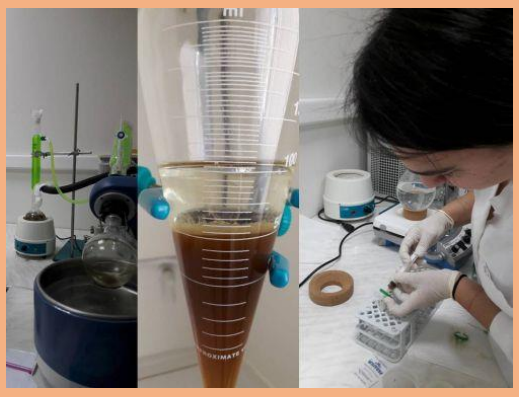
Vertical Laminar flow, centrifuge,

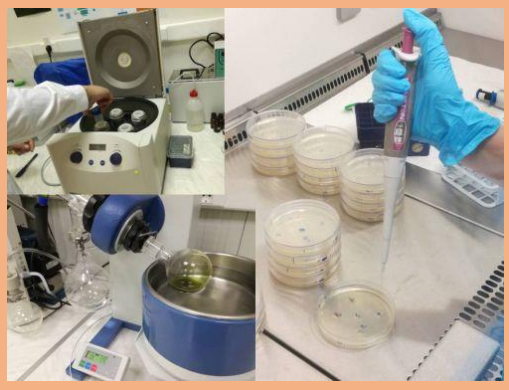
microplate reader, HPLC / UV chromatograph,

ELISA spectrophotometer,

autoclave, etc.

Toxicity and Bioactive Molecules Control Laboratory





The laboratory conducts applied research to evaluate the toxicity and bioactivity of natural products and by-products, the optimization of extraction, and the utilization of food industry by-products in the context of bioeconomy.

The equipment of the laboratory includes: vertical thread flow chamber,

incubation chamber,

ultrasound bath,

analytical balance,

rotary evaporator,

UV / vis spectrophotometer,

HPLC / UV,

extraction devices,

microscope,

microplate reading spectrophotometer, etc.

Laboratory of Food Chemistry and Industrial Fermentation

The laboratory conducts research on fermentation technology and food chemistry, the analysis of food and agro-industrial sources of renewable raw materials (e.g. agro-industrial waste and by-products), their biotechnological utilization as well as the development of innovative bio-products worth.

The equipment of the laboratory consists of:

super-critical CO_2 extractor,

texture analyzer, rheometer,

electrospinning apparatus,

freeze-dryer,

bioreactors, incubation chambers,

PCR, ATR-FTIR

ultrasonic bath, water baths,

UV / vis spectrophotometer,

rotary evaporators,

Kjeldahl device, soxhlet,

milkoscan (FTIR),

freezers -80 & -30, refrigerators,

microcentrifuge, centrifuge,

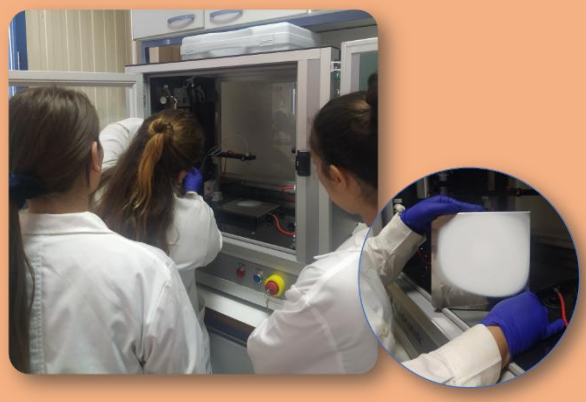
HPLC (DAD, Fluorescence and RI),

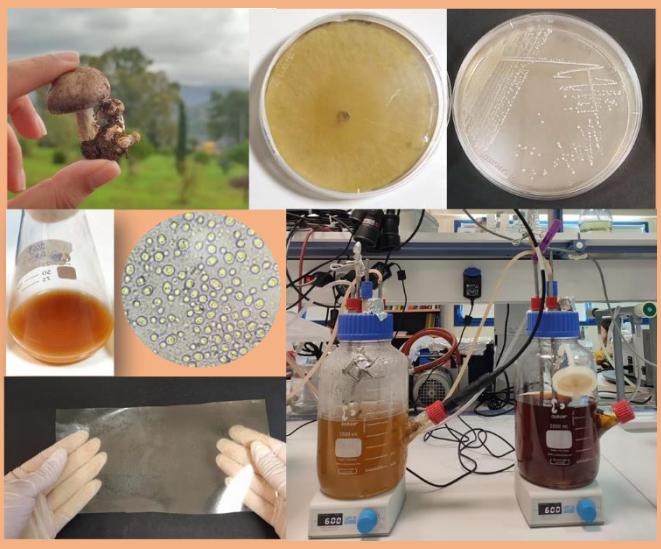
gas chromatography (GC),

microscopes, pH-meters,

vortex shakers, autoclave,

hotplate magnetic stirrers etc.





Research programs conducted at the Department of Food Science and Technology:

Below are research programs implemented in the Department in the academic year 2019/2020

FOODBIOMES (MIS 5047291)**.** Infrastructure of Microbiome Applications in Food Systems.

FOOD INNOVATION - RI (MIS 5027222). Research infrastructure for the development of food bioprocesses.

PANAS (MIS 5033680). The monumental forests of the Ionian Sea as cradles of biodiversity and high nutritional value of macromycetes: mapping, recording, evaluation, networking, conservation and sustainable development.

WHEY4VALUE (MIS 5007020). Utilization of dairy waste for the production of products of high added value.

(MIS 5006536). Research on the biological value of products (wine, raisins) and grape by-products from the Ionian Islands.

BIOCONSION (MIS 5033717). Recording, Characterization, Evaluation and Conservation of Natural Genetic Resources of PIN in the context of the National Strategy for Biodiversity: Natural Species with Medicinal Value.

OINOTYPOS (MIS 5007188). Vaccination of local vine varieties to suitable subjects, evaluation of their viticultural characteristics and management of vineyard soil.

DIGIFLORA (MIS 5030591). Development of digital applications for the promotion of the flora of the Ionian Islands

(MIS 5007257). Development of an intelligent application for the remote monitoring and real-time forecasting of dacois infestation and olive grove diseases.

HNV-Threat (MIS 5034911). Assessment of the impact on the biodiversity of areas of High Natural Value of the Ionian Islands Region due to the invasion of those of the alien invasive weed "Vromokarydia" (Ailanthus altissima)

(**MIS 5006879**). Utilization of Olive Mill waste for the creation of products of high added value.

MedOil (MIS 5005497). Investigation of bioactive and health-protecting substances of the olive oil of the Ionian Islands.

(**MIS 5006342**). Quality upgrade of local wines of the Ionian Islands using native yeasts.

WinByPro (MIS: 5007238). Utilization of vinification residues for the production of high value-added raw materials for the food, cosmetics and parapharmaceutical industries

Boarding

The Department of Food Science and Technology provides full board to its students. The meals are provided free of charge to the students who meet the criteria of No. Φ5 / 68535 / Β3 / 18-06-2012 of the Joint Ministerial Decision.

The student restaurant is located within the surrounding area of the Department and is within walking distance from the main building.

Applications for free meals are usually submitted in October for existing students, while for newly admitted students at enrollment.

Insurance

Students of the Department of Food Science and Technology, who are not insured with any (welfare) institution, are entitled to free, full medical and hospital care in the National Health System, during their studies, increased by half (six years in total).

The approval of the student health card is recommended to be done at the beginning of each academic year by the Secretariat of the Department (stamped with the round stamp of the Institution, in order to confirm the student status).

Loans-scholarships

Student loans are provided in accordance with P.D. 360/83. Student scholarships are awarded by the STATE SCHOLARSHIPS FOUNDATION (SSF/IKY) based on academic performance.

Housing / Housing Allowance

The procedures and the supporting documents for the granting of a housing allowance are governed by JM 2993/2017, as it was amended by the Government Gazette 1688 / 15-05-2019 and the respective annual clarifying circulars.

Prerequisite for submitting the application is the student for whom the allowance is granted, to be a Greek citizen or a citizen of another country of the European Union, to have a valid academic identity card and to have a TIN. Citizenship is associated only with the student's physical presence and not with the student's parents or guardians.

The electronic applications are submitted annually electronically, through the website of the Ministry of Education, Research and Religions https://stegastiko.minedu.gov.gr, in the special application of housing allowance.

The traineeship of the students of the Department of Food Science and Technology is an integral part of the study program and a necessary prerequisite for obtaining the Degree.

It is of great importance as an institution because it directly connects the theoretical and laboratory training that students acquired during their studies with their application in the work environment and thus is a key component of the integrated education of graduates.

Internship is mandatory and takes place in the summer months of the 3rd or even the 4th year. The duration of the internship is two (2) months.

Students who have the right to do a traineeship are

A. those who are in the 6th or 8th semester of studies

B. and those who have successfully attended at least half of the courses (of the first 6 semesters) of the study program and among them half of the 14 specialization courses listed below, in which students must have been successfully examined in order to be able to start their traineeship.

Specialization courses:

1. Food Processing I
2. Food Analysis
3. Food Microbiology
4. Food Engineering
5. Food Chemistry
6. Food Biotechnology
7. Food Processing II
8. Fruits and Vegetables Science and Technology
9. Fats and Oils Science and Technology of
10. Milk and Milk Products Science and Technology
11. Industrial Fermentations
12. Instrumental Food Analysis
13. Cereals and Cereals Products Science and Technology
14. One elective course from Groups A, B or C

The traineeship of the students of the Department of Food Science and Technology can take place:

(a) in companies or other bodies of the students' choice

(b) through the Program "Internship for Higher Education of the Ionian University"

(c) through the Erasmus + program (abroad)

PROCEDURE FOR BEGINNING TRAINEESHIP

1. Students who meet the above conditions submit an application to the Secretariat of the Department.

2. The Traineeship Committee of the Department checks whether:

• The student meets the requirements

• The institution is suitable for the realization of the student's traineeship (relevance of the traineeship object with the object of study of the Department) and approves or not the placement of the student in the respective institution.

3. The Secretariat issues the certificate of traineeship for use in the employment agency.

4. The Special Employment Contract is signed between the employment agency, the President of the Department and the trainee student.

5. The student starts his traineeship which he records uninterruptedly in the internship book.

6. The traineeship is completed at the end of the two months and only when the student submits to the Secretariat of the Department the completed traineeship book and a certificate of completion of the internship by the institution.

TRAINEESHIP PLACES

(a) (Traineeship in a company or in another body of the students' choice)

Students seek out businesses or stakeholders on their own and negotiate the possibility of doing their internship. The basic condition is the relevance of the object of employment with the object of study of the student. Once an agreement has been reached, the steps mentioned above are followed for the approval of the institution by the internship Committee and the start of the internship.

(b) Traineeship through the program "Internship for Higher Education of the Ionian University" (through NSRF)

The traineeship of the students of the Department of Food Science and Technology can be carried out within the program "Internship of Higher Education of the Ionian University". The program is funded by the European Social Fund (ECB) and co-financed by National Resources through the Operational Program "Competitiveness, Entrepreneurship and Innovation" of the Corporate Pact for the Development Framework 2014-2020, with the Intermediate Agency for the Special Management Development Program Human Resources, Education and Lifelong Learning ".

(c) Traineeship through Erasmus + abroad

The students of the Department can prepare their internship abroad through the Erasmus + Program (Student mobility for internship ERA-PLACES). Relevant details and conditions are analyzed below in the ERASMUS section and on the website: https://sites.ionio.gr/international/gr/erasmus/

The traineeship takes place in both the public and private sectors. Students are given the opportunity to choose a body from the list of collaborating companies and organizations of the Department or to propose the positions they want to occupy. In this case, the Traineeship Committee, after checking the suitability of the company, gives the position to the proposing student. Relevant announcements, detailed instructions and everything else regarding the realization of an internship through NSRF are posted on the website: http://dasta.ionio.gr/internship/

Obligations - Rights

The trainee in the workplace is obliged to follow the operating hours of the company or the Service, the safety and labor regulations as well as everything else that applies to the staff of the company or the service.

When the trainee does not comply with the above, the supervising instructor is informed, who then informs the Department so that the trainee will comply with the requirements.

In case of recurrence of the trainee, the company or service may unilaterally terminate the special contract and terminate its employment. The student is then required to repeat the same procedure the following year to find a new position, in order to complete the remaining time of his / her traineeship.

Students during their traineeship do not acquire any other right of employment or retirement in addition to their compensation and insurance against occupational risk.

During the two-month traineeship, the trainee student may, for serious reasons, justifiably be absent for a total of five working days.

Possibility of admission to the Department of Food Science and Technology with qualifying examinations

The procedure is carried out in accordance with the provisions of the ministerial decision Φ.2 / 121871 / Β3 / 3-11-2005 "Classification of graduates in Higher Education", as amended by Φ.2 / 125186 / Β3 / 22-11-2006, Φ.2 / 63260 / Β3 / 15-6-2007, Φ.1 / 192329 / Β3 / 13-12-2013 and 92983 / Ζ1 / 11-06-2015 (Government Gazette 1329 τ. Β '/ 02-07-2015) ministerial decisions and Law 4485, article 74 par. 3 (Government Gazette 114 / 4-8-2017).

The qualifying examinations concern the graduates of Universities, Technological Educational Institutes (TEI) or equivalent to them, the School of Pedagogical and Technological Education (SPDE/Α.Σ.ΠΑΙ.Τ.Ε.), of Greece or Abroad (recognized by the Hellenic National Academic Information Center (NARIC /Δ.Ο.Α.Τ.Α.Π.) as well as of Holders of Higher School diplomas with a two-year and a two-year course of study under the responsibility of the Ministry of Culture, Education and Religions and other Ministries who have the right after their successful examination in the qualifying exams to register, study and receive an additional degree.

In particular, all graduates of Higher Education Institutes (HEI/ AEI), TEI or equivalent, ASPAITE*, of Greece or abroad, as well as holders of degrees

Higher schools of two years and two years of study under the responsibility of the Ministry of Culture, Education and Religions and other Ministries, regardless of subject can be classified in each Department of the University, TEI. or ASPAITE*.

The admission of graduates through qualifying examinations takes place in the Department to which the candidates apply and concerns their admission only to this Department based on the examinations conducted by the Department itself.

Number of entrants with qualifying entrance exams

Every year the number of students admitted with qualifying exams amounts to 12% of the corresponding number of students admitted by the Ministry of Education through Entrance Examination. The Department cannot admit a larger number of students, but neither a smaller one, as long as there is a sufficient number of examinees who meet the requirements.

Conducting examinations

The Department conducts the qualifying exams annually, from December 1-20. The procedure is carried out by submitting the participation of the

candidates in a written examination of three courses, which are selected by the General Assembly of the Department.

The examined courses and their respective material as decided by the General Assembly of the Department are announced in time on the Website of the Department, in order to give sufficient time for the preparation of the interested parties. The schedule of the qualifiers is announced in time on the Website of the Department.

Applications for Participation

Every year, usually between November 1st and 15th, applications are submitted to the Secretariat of the Department. A relevant announcement is issued in a timely manner on the Department's website.

All successful students are exempted from the examination of the courses in which they were examined for their classification if these courses correspond to courses of the study program of the host Department.

The General Assembly of the Department may exempt those classified from the examination of the courses of the study program of the host Department that were fully or adequately taught in the Department of origin, judging each time based on the course outline of the study program of the Department of origin.

Important time milestones:

April-May of the previous academic year: Announcement of examined courses, exam material on the websites of the Departments and the Department of Studies.

September-October of the current academic year: Announcement of the examination program on the websites of the Departments and the Department of Studies.

November 1 - 15: Submission of applications for participation in the qualifying exams

December 1st - 20th: Conducting qualifying exams

Erasmus+ is the European Commission 's program for education,

training, youth and sport, which aims to help strengthen skills and employability and to support the modernization of education, training and youth systems in all areas of Lifelong Learning

Learning (Higher Education, Vocational Education and Training, Education Adult, School Education, youth activities, etc).

Under the Erasmus + program, the European Commission grants scholarships of student mobility for studies. The activities within Erasmus +, which also concern the students of the Department of Food Science and Technology, are:

(a) Student mobility for studies,

(b) Student mobility for internship. Eligible to participate are undergraduate, postgraduate students and doctoral candidates who are normally enrolled in the Department and can travel through

specific procedure in Institutions with which there is a bilateral agreement in force.

The mobility of the above categories includes the preparation of a dissertation, a diploma thesis and a doctoral dissertation.

The regulation of the ERASMUS + program of the Ionian University applies to all mobility issues, which is posted on the main website of the Ionian University:

http://sites.ionio.gr/international/gr/erasmus

Specifically, for the Department of Food Science and Technology, the regulation specifies the following points and complements the current Erasmus + regulation as follows:

A. Classical student mobility for studies

Conditions of Participation

Eligible to participate in the program are

1. The students who are normally registered in the Department of Food Science & Technology

2. The students who study at least in the 2nd year of studies

3. Those who have successfully completed the courses of the 1st year of study and the 2/3 of those who correspond in the additional semesters up to that during which they apply for mobility

4. In 2/3 of all the above courses to have a grade of 6

5. Have the level of language proficiency as determined by the host university.

Selection Criteria

1. Average course performance, multiplied by a factor of 36 [40%]

2. The total of ECTS credits credited to each student multiplied by a factor of 1 [30%]

3. Five (5) additional points for every 0.5 point above grade point average score 6.5 [percentage 10%]

4. Two (5) additional points for each course which has been evaluated with "excellent" (≥ 8.5) [percentage 10%]

5. Candidate interview. A three-member committee is appointed for the interview, consisting of:

(a) the Erasmus Academic Officer of the Department, (b) his Deputy and (c) the President of the Department.

The score of the interview follows the scale 0-10 and is obtained from the average of the individual scores of the members of the committee [10%].

The final grade results from the sum of the five (5) above criteria. The one with the highest score becomes dominant.

Priority is given to the applications of students who participate for the first time in the program.

Applications from those who have moved in the past are only considered if there are vacancies.

B. Mobility of students for internship

The internship in the curriculum of the Department of Food Science and Technology is mandatory without ECTS. The students of the Department can also prepare it through the **Erasmus +** Program.

Conditions of Participation

Eligible to participate in the program are those students who

1. are normally registered in the Department of Food Science & Technology

2. are in the 6th semester

3. have successfully completed 2/3 of the total courses corresponding to

previous semesters of their studies

4. have an GPA (grade point average) rating of ≥ 6.5.

5. have a language proficiency level of at least B1 in English or the language of the host country.

Interns who have recently graduated can also do an internship as long as they apply and their

applications are approved by the General Assembly of the Department before their graduation.

Relevant instructions, conditions and details for the internship through Erasmus + abroad before and after graduation can be found at the link:

https://sites.ionio.gr/international/gr/erasmus/

The mobility and performance statistics for the last two years under the ERASMUS program are summarized in the following table:

Grades of Erasmus students at the Department of Food Science and Technology

Grades (descending order)	**Absolute frequency** (stidents)	**Relative frequency** (%)	**Sum of success rate** (%)
Projects			
10	9	45	45
9	8	40	85
8	3	15	100
7	0	0	
6	0	0	
	20	100	

Notes

1. All data concern the two academic years of 2019 onwards, ie 2019-20 & 2020-21)

2. Courses that have a small number of students are elective courses

3. For some courses which are new in the PS or for which they do not exist

4. the data concerning the diplomas concern the diplomas prepared with the previous MS and presented in the last two years

5. The data of the diplomas also include the projects of the incoming Erasmus students

Graduates of the Department of Food Science and Technology can claim professional and scientific careers in the field of food either as freelancers or as employees in the public or private sector.

Possible career prospects are:

- Executives of food industries (product design, production, quality control, management services, etc.),

- Executives of food analysis laboratories,

- Food consultants.

In addition, the undergraduate program is structured to provide sufficient knowledge and preparation to graduates wishing to work in education or pursue postgraduate studies in Greece or abroad.

The department of Food Science and Technology from 2019 is accepting **PhD** candidates holding undergraduate and Master degree in the following disciplines:

Natural and Agricultural Sciences

Health & Life Sciences

Chemical Engineering

The **Doctoral Studies of the Department of Food Science and Technology** are organized and operate in accordance with the provisions of Law 4485/2017 as they apply and as formed in the future, by the other relevant legal provisions and decisions, as well as the provisions of this Regulation.

Secretariat of the Department of Food Science and Technology

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