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%	