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%	