COURSE OUTLINE

(1) GENERAL

SCHOOL	FOOD, BIOTECHNOLOGY AND DEVELOPMENT		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	FOOD SCIENCE AND HUMAN NUTRITION		
COURSE CODE	2610	**SEMESTER**	SPRING
COURSE TITLE	ENOLOGY II		

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 and Practicals	5 (3L+2P)	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*	Food Science (chemistry, microbiology, technology, sensory)
PREREQUISITE COURSES:	Enology I, Food Chemistry
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	www.aua.gr

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

It aims at:

a) Acquiring the knowledge of wine chemical composition, stabilization treatments, conservation, ageing and origins of the main organoleptic defects
b) Understanding and recognizing the relationship among all the above parameters and wine quality
c) The development of their ability to stabilize red and white wines

At the end of the course, students should be able to:

- Understand the meanings of wine stabilization and treatments
- Know the chemical composition of wine and its relationship with wine quality
- Distinguish the main reasons of chemical and microbial instability in wines and make decisions about the possible treatments
- Connect wine style and ageing
- Evaluate wine stability using laboratory methods
- Evaluate wine quality by sensory analysis.
- Recognize wine defects and their possible origin
- Make decisions concerning the addition of specific enological substances in wine
- Work in teams in the lab to complete an analysis, discuss the results and prepare reports
- Critically compare the results obtained in the lab with published values

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

- Work autonomously

- Work in teams
- Make decisions
- Retrieve, analyze and synthesize data and information, with the use of necessary technologies
- Creative and causative thinking

(3) SYLLABUS

Lectures

A. The chemistry of wine:

1. Carbohydrates-potential alcoholic content
2. Organic acids-acidities
3. Phenolic and volatile compounds

B. Clarification and stabilization treatments

4. Filtration, fining
5. Adjustment of chemical composition
6. Chemical stabilization (tartrate precipitation)
7. Chemical stabilization (iron, copper, protein and tannin casses)
8. Microbial stabilization
9. Ageing of wines in barrels: Phenomena occurring during ageing
10. Ageing of wines in bottles: Phenomena occurring during ageing
11. Wine sensory analysis
12. Chemical nature, origins and consequences of the main organoleptic defects
13. Course key issues

Laboratory

1. Monitoring of malolactic fermentation
2. Wine chemical stabilization treatments: wine stability tests
3. Wine chemical stabilization treatments: protein stabilization
4. Wine chemical stabilization treatments: tartaric stabilization
5. Browning susceptibility of white wines
6. Sensory analysis: color and taste
7. Sensory analysis: wine aroma
8. Sensory analysis: wine defects
9. Wine tasting

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Direct learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *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*	<table><tr><th>*Activity*</th><th>*Semester workload*</th></tr><tr><td>Lectures</td><td>39</td></tr><tr><td>Laboratory work</td><td>18</td></tr><tr><td></td><td></td></tr><tr><td>Study of book chapters</td><td>68</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>Course total</td><td>125</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.*	Multiple choice written examination for the theoretical part. Written examination and laboratory exercises The final grade is the average of the laboratory exercises and the written exam grades

(5) ATTACHED BIBLIOGRAPHY

1.Σουφλερός, Ε. *Οινολογία Επιστήμη και Τεχνολογία*, 2009, ISBN: 978-960-90699-5-3
2. Ribereau-Gayon, P., Glories, Y., Maujean, A., Dubourdieu, D. (2000) Handbook of enology, volume 2, John Wiley & Sons Ltd, England