COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Applied Biology and Biotechnology		
ACADEMIC UNIT	Food Science and Human Nutrition		
LEVEL OF STUDIES	BACHELOR		
COURSE CODE	**2610**	**SEMESTER**	**6°**
COURSE TITLE	Oenology 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 practical's			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*	Field of Science		
PREREQUISITE COURSES:	Enology I, Food Chemistry		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	http://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*

The course is a continuation of the introductory course in Oenology I.

The content of the course aims to familiarize students with the chemical composition of wines, post-fermentation processes, oxidative and reductive aging, organoleptic assessment, and the connection of all these elements to the concept of wine quality.

The ultimate goal of the laboratory exercises is the practical application of stabilization techniques for white and red wines.

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

- Understand the basic concepts of wine stabilization
- Know the chemical composition of wines and be able to relate it to their final quality
- Identify the main causes of chemical and microbial instability in wines and decide on appropriate corrective actions
- Connect a wine's style with its aging process
- Assess the stability/instability of wines in a laboratory setting
- Conduct laboratory tests involving the addition of oenological substances and decide on their appropriate use in the winery
- Perform an organoleptic evaluation of a wine
- Identify, assess, and address defective aromas in wines
- Collaborate with classmates to carry out laboratory measurements, discuss the results, and prepare a report
- Critically compare the results of analyses performed with data from the literature

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Teamwork	
Working in an international environment	*Criticism and self-criticism*
Working in an interdisciplinary environment	*Production of free, creative and inductive thinking*
Production of new research ideas	*Others…*

- Working Independently
- Teamwork
- Decision-making
- Production of free, creative and inductive thinking
- Search for analysis and synthesis of data and information with the use of necessary technology

(3) SYLLABUS

Lectures

1. Chemical composition of wine: A. Sugars – Potential alcoholic strength
2. Chemical composition of wine: B. Organic acids – Acidities
3. Chemical composition of wine: C. Phenolic and aromatic compounds
4. Post-fermentation treatments of wines: A. Clarification – Fining
5. Post-fermentation treatments of wines: B. Adjustment of chemical composition
6. Post-fermentation treatments of wines: C. Chemical stabilization – Tartrate stabilization

7. Post-fermentation treatments of wines: Management of hazes caused by metal ions, proteins, and macromolecules
8. Microbial stabilization – Spoilage microorganisms: bacteria, yeasts, fungi
9. Oxidative ageing of wines in oak barrels: Contribution of barrel wood to wine maturation and quality; effects of time, temperature, and oxygen
10. Reductive ageing of wines in bottles
11. Organoleptic evaluation of wines – visual assessment, evaluation of aroma, taste, astringency, and aftertaste
12. Organoleptic defects of wines: causes, chemical structure, and impact on final quality
13. Review of the main course topics – Q&A session

Laboratory

1. Monitoring of malolactic fermentation
2. Protein stability testing
3. Protein stabilization of wines
4. Tartaric stabilization of wines
5. Fining of red wines
6. Fining of white wines
7. Oxidation potential testing of white wines
8. Sensory evaluation of wines: technique
9. Sensory evaluation of wines: aroma
10. Sensory evaluation of wines: defective odors
11. Microbial stability testing of wines

12-13. Assessment of wine quality (group project)

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentations and self-assessment test in the Blackboard.
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	39
Laboratory practice	24
Study	59
Exams	3
Course total	**125**

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 and report. The final grade is the average of the report and the written exam grades

(5) ATTACHED BIBLIOGRAPHY

- Suggested 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
3. Ribereau-Gayon, P., Glories, Y., Maujean, A., Dubourdieu, D. (2000) Handbook of enology, volume 3, John Wiley & Sons Ltd, England
4.Principles and Practices of Winemaking . Boulton B. Roger, Singleton L. Vernon, Bisson F. Linda, Kunkee E. Ralph Springer Science & Business Media, 1999.
5.Understanding Wine chemistry. Waterhouse Andrew, Sacks Gavin, Jeffery David, Wiley 2016

- Related academic journals:

American Journal of Enology and Viticulture (AJEV)
Australian Journal of Grape and Wine Research
South African Journal of Enology and Viticulture
Vitis – Journal of Grapevine Research
OENO One