

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Food and Nutritional Sciences		
ACADEMIC UNIT	Department of Food Science and Human Nutrition		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	1380	SEMESTER	5 ^o
COURSE TITLE	ENOLOGY I		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>	WEEKLY TEACHING HOURS	CREDITS	
Theory	3	5	
Lab exercises	2		
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek/English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (in English)		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/ETDA171/		

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 material aims to familiarize students with grapes, their characteristic components and their importance in winemaking, grape ripening and metabolic processes, common mechanical procedures in white and red winemaking, common chemical treatments, corrections to potential alcohol content, acidity, nitrogen content, white winemaking, red winemaking, malolactic fermentation.

The ultimate goal of the laboratory exercises is to acquire knowledge in the measurement and evaluation of parameters such as sugars with refractometry and areometry, acidity, pH, free and total sulphurous anhydride, ethyl alcohol, volatile acidity, reducing sugars, colour intensity and hue, total phenols.

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

- Understand the basic concepts of wine production
- Be familiar with the chemical analysis of wines and be able to relate this to the final quality
- Know the basic characteristics of grapes and their importance for wine production
- Know the necessary corrections that must be made to musts
- Perform laboratory analyses to evaluate the basic parameters of wines
- Learn the details of white wine production
- Learn the details of red wine production
- Learn the details of sparkling wine production
- Understand malolactic fermentation and changes in wines

In all cases they learn to understand the different fields, to evaluate the methods and procedures and to form an opinion about the result produced.

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?

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

Working in an interdisciplinary environment
 Search for, analysis and synthesis of data and information, using the necessary technologies
 Working independently
 Teamwork
 Adapting to new situations
 Decision making
 Criticism and self-criticism
 Production of free, creative and inductive thinking

3. SYLLABUS

THEORY:

1. Grape composition:
 - A. Skin. Anthocyanins, phenolic compounds, aromatic compounds, precursor aromatic compounds.
 - B. Flesh—sugars, nitrogenous compounds.
 - C. Tannins, linoleic acid
2. Grape ripening:
 - A. Sugar development
 - B. Acid development
 - C. Polyphenolic ripening
3. Harvesting-transporting grapes to the winery
4. Mechanical processing, crushing, breaking, transport by pumps
5. Sulfur dioxide, forms, method of use
6. Must corrections, increase/decrease in potential alcohol content, increase/decrease in acidity
7. Nitrogen assimilable by yeast, must correction
8. Biochemistry of alcoholic fermentation
9. White vinification, grape pressing
10. New methods of white vinification
11. Red vinification, extraction
12. Malolactic fermentation
13. Sparkling and sweet wines. Production methods

LABORATORY:

- Estimation of sugar content in must using areometry and refractometry
- Measurement of pH in wines and musts
- Measurement of total acidity in wines and musts, units, calculations
- Determination of alcohol content, reduction to reference temperature using tables
- Measurement of reducing sugars, wine classification
- Measurement of volatile acidity, levels, legislation, calculations, units
- Determination of free and total sulfurous anhydride, levels, legislation
- Determination of phenolic compounds ($\Delta\Phi\text{O}$, Folin)
- Study of colour (chromatometric characteristics) in white and red wines

4. TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	<p>Teaching in a live auditorium with the possibility of distance learning.</p> <p>Practical exercises in the laboratory</p>												
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>In lectures, they are used:</p> <ul style="list-style-type: none"> - remote meeting tools (cisco webex), - presentation software (power point type) - use of a traditional table for exercises <p>In addition, students use office automation tools, web browsers as well as e-readers for digital books.</p>												
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>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.</i></p> <p><i>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</i></p>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 70%;">Activity</th> <th style="width: 30%;">Semester workload</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>45</td> </tr> <tr> <td>Laboratory practice</td> <td>45</td> </tr> <tr> <td>Interactive teaching</td> <td>20</td> </tr> <tr> <td>Individual study</td> <td>15</td> </tr> <tr> <td>Course total</td> <td>125</td> </tr> </tbody> </table>	Activity	Semester workload	Lectures	45	Laboratory practice	45	Interactive teaching	20	Individual study	15	Course total	125
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<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Final written theory exam with short answer or multiple-choice questions or true/false questions.</p> <p>Written exam for the lab with short-answer or multiple-choice questions or outcome assessment.</p> <p>The final grade results from the average of the theory and laboratory grades.</p>												

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Soufleros, E. Oenology Science and Technology, 2009, ISBN: 978-960-90699-5-3
- Ribereau-Gayon, P., Glories, Y., Maujean, A., Dubourdieu, D. (2000) Handbook of enology, volume 1 and 2, John Wiley & Sons Ltd, England

- Wine Chemistry and Biochemistry – Winemaking, Edited by George Kotseridis and Nikolaos Kontoudakis
- Ribereau-Gayon, P., Glories, Y., Maujean, A., Dubourdieu, D. (2000) Handbook of enology, volume 2, John Wiley & Sons Ltd, England
- Principles and Practices of Winemaking . Boulton B. Roger, Singleton L. Vernon, Bisson F. Linda, Kunkee E. Ralph Springer Science & Business Media, 1999.
- Understanding Wine chemistry. Waterhouse Andrew, Sacks Gavin, Jeffery David, Wiley 2016

- Related academic journals:

- Oeno One
- Wine Technical Reviews IVES
- Bulletin d' OIV
- Revue Française d' Oenology
- American journal of Enology and Viticulture