

## ENOLOGY I

### COURSE OUTLINE

#### (1) GENERAL

<b>SCHOOL</b>	FOOD SCIENCE AND NUTRITION		
<b>ACADEMIC UNIT</b>	FOOD SCIENCE AND HUMAN NUTRITION		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	<b>1380</b>	<b>SEMESTER</b>	<b>5o</b>
<b>COURSE TITLE</b>	ENOLOGY I		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures and practical laboratory training	5 (3L+2P)	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Organic chemistry, Food Chemistry, Food Engineering		
<b>PREREQUISITE COURSES:</b>	Food Chemistry		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	English		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	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:

- Acquiring the knowledge of grape/berries composition, grape maturity process
- Common mechanical processes among the various winemaking products
- Common chemical processes, must adjustment methods
- White winemaking
- Red winemaking
- Malolactic fermentation

The aim of the practical teaching is to train the students to measure basic wine analytical procedures such as sugars, ph, titratable acidity, free and total sulfides, ethanol, volatile acidity, reducing sugars, colour density, total phenolics

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

- Understand the meanings of grape composition and the technological importance of it part of the grape
- Understand the common practices
- Monitor the must corrections and improvements
- To know the basic must adjustment methods and to take decisions concerning the addition of specific enological products in must and wine
- To know the details of white winemaking
- To know the details of red winemaking

### 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*

*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...*

- 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

1. Berry composition :  
Skin, anthocyanins, proanthocyanidins, phenolic compounds , aromatic precursors  
Flesh- sugars, nitrogen compounds  
Seeds, tannins, linolenic acid
2. Grape maturity:
  - A. sugars evolution
  - B. acids evolution
  - Γ. phenolic maturity
3. Harvest
4. Common pre-fermentative procedures, sorting, destemming, crushing
5. Sulfur dioxide
6. Must adjustment, potential alcohol reduction, titratable acidity adjustment
7. Yeast assimilable nitrogen
8. Alcoholic fermentation biochemistry
9. White winemaking , alcoholic fermentation, yeast strains
10. New methods of white winemaking
11. Red winemaking, maceration methods,
12. Malolactic fermentation, lactic bacteria, conditions for malolactic fermentation
13. Sweet wines elaboration

#### Laboratory

1. Measuring Brix,
2. Measuring Baume
3. Measuring pH,
4. Measuring titratable acidity
5. Measuring free
6. Measuring total sulfides
7. Measuring reducing sugars
8. Measuring ethanol by distillation
9. Measuring volatile acidity by steam distillation
10. Measuring total phenolics

11. Colour measurements
12. Combining quality control measures for the wines
13. Repetition

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face and distance learning	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>		
<b>TEACHING METHODS</b> <i>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.</i>  <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>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39
	Laboratory work	18
	Study for report preparation	10
	Study of book chapters	58
	<b>Total contact hours and training</b>	<b>125</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i>  <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>	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	

*Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*

#### **(5) ATTACHED BIBLIOGRAPHY**

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