

## 27133 - Wine Biochemistry and Microbiology

### Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	446 - Degree in Biotechnology
ECTS	6.0
Course	4
Period	First semester
Subject Type	Optional
Module	---

### 1. Basic info

#### 1.1. Recommendations to take this course

#### 1.2. Activities and key dates for the course

For students enrolled in the subject, places, times and dates of lectures and practical sessions will be public via Bulletin Board advertisements of the grade on the platform Moodle at the University of Zaragoza, <https://moodle2.unizar.es/add/>, and in the moodle page for the course. These routes will be also used to communicate enrolled students their distribution by groups of practical sessions, which will be organized by the coordination of degree. Provisional dates will be available on the website of the Faculty of Sciences in the corresponding section of the Degree in Biotechnology: <https://ciencias.unizar.es/grado-en-biotecnologia>.

In this web there will be also available the dates of exams.

### 2. Initiation

#### 2.1. Learning outcomes that define the subject

#### 2.2. Introduction

### 3. Context and competences

#### 3.1. Goals

#### 3.2. Context and meaning of the subject in the degree

#### 3.3. Competences

#### 3.4. Importance of learning outcomes

### 4. Evaluation

### 5. Activities and resources

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### 5.1. General methodological presentation

This course is scheduled starting from an intensification of theoretical knowledge acquired an eminently practical and applied orientation. It is intended that students are able to apply in practice those theoretical and practical knowledge they have acquired in the course.

To achieve this, the theoretical and practical classes are interleaved to optimize the learning process, reducing the time from students acquire theoretical knowledge until applied in the laboratory. This strategy progressively adapts to solve practical problems involved ultimately more applied part of the course, and a way of bringing students to situations that would confront in a job in the field of biochemistry and microbiology oenology.

### 5.2. Learning activities

Theoretical classes. Presencial. 30 hours. They are presented to students basic theoretical knowledge of the subject

Laboratory practical classes. Presencial. 20 hours.

Redaction and exposition. Presencial, 3 hours. No presencial, 22 hours. This activity is that students collect information on a particular topic, aided by the teacher. The analysis of information should lead to the development of a structured in Introduction, Methods, Results, Discussion, Conclusions, and Bibliography work. Professor monitor at all times the individual work of students by scheduling tutoring sessions.

### 5.3. Program

#### Part 1. Grape and wine composition.

Lesson 1. Chemical composition of grape berries.

Lesson 2. Chemical composition of wine

Lesson 3. Sulphur dioxide in oenology.

#### Part 2. Alcoholic and malolactic fermentations

Lesson 4. Yeast and alcoholic fermentation

Lesson 5. Natural fermentation of must

Lesson 6. Starter cultures and inoculated fermentations

Lesson 7. Lactic acid bacteria and malolactic fermentation

Lesson 8. Malolactic fermentation in wines

Lesson 9. Control of malolactic fermentation

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### Part 3. Microbial wine spoilage

Lesson 10. Introduction to microbial wine spoilage

Lesson 11. Wine spoilage by yeast

Lesson 12. Wine spoilage by filamentous fungi

Lesson 13. Wine spoilage by lactic acid bacteria

Lesson 14. Wine spoilage by acetic acid bacteria

Lesson 15. Microbial wine spoilage affecting safety of wine

### Practical course

Wine and must physic-chemical analysis

Monitoring microbes during wine fermentation

Isolation and identification of fermenting yeast

Starter cultures for wine fermentation

Detection of spoilage microorganisms

### 5.4.Planning and scheduling

Schedules of lectures and problems will coincide with the officially established and will be available at:  
<https://ciencias.unizar.es/grado-en-biotecnologia>.

The places, calendar and groups for training and practical sessions will be established in coordination with the rest of maters at beginning of course. The Coordinator will produce the groups of students for these activities at beginning of course to avoid overlaps with other subjects.

### 5.5.Bibliography and recomended resources

**BB**

Blouin, Jacques. Enología práctica :  
Conocimiento y elaboración del vino /  
Emile Peynaud, Jacques Blouin ; versión  
española Eduardo Cotillas Provencio ;

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- revisión Alfredo González Salgueiro . - 4ª ed. rev. y ampl. Madrid : Mundi-Prensa, 2004
- BB** Microbiología del vino / coordinadores Alfonso V. Carrascosa, Rosario Muñoz, Ramón González . - 1ª ed Madrid : AMV Ediciones, 2005
- BB** Peynaud, E.. Enología Practica: conocimiento y elaboración del vino. Mundi-Prensa Libros, 2006
- BB** Microbiología enológica : fundamentos de vinificación / José Antonio Suárez Lepe, Baldomero Iñigo Leal . 3ª ed. Madrid : Mundi-Prensa, 2004
- BC** Bird, D.. Understanding Wine Technology. Board and Bench Publishing: Warwickshire UK, 2010.
- BC** Fugelsang, K. C.. Wine Microbiology: Practical applications and Procedures. 2nd Springer. 2007
- BC** Goode, J.. The Science of Wine. From wine to glass. 2nd ed. University of California Press-Mittechell Beazley: Berkeley and Los Angeles, CA, 2014.