



COURSE DETAILS OENOLOGY I MODULE OF "WINE CHEMISTRY"

SSD AGR15*

** In case of an integrated course, the SSD (scientific disciplinary sector) should be written above only if all modules of the course belong to the same SSD, otherwise the SSD is to be written alongside the MODULE (see below).*

DEGREE PROGRAMME: VITICULTURE AND ENOLOGY

ACADEMIC YEAR 2021 -2022

GENERAL INFORMATION – TEACHER REFERENCES

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GENERAL INFORMATION ABOUT THE COURSE

INTEGRATED COURSE (IF APPLICABLE): OENOLOGY I

MODULE (IF APPLICABLE): WINE CHEMISTRY

CHANNEL (IF APPLICABLE):

YEAR OF THE DEGREE PROGRAMME (I, II, III): II

SEMESTER (I, II): II

CFU: 6

REQUIRED PRELIMINARY COURSES (IF MENTIONED IN THE COURSE STRUCTURE “ORDINAMENTO”)

Fundamentals of general and inorganic chemistry and of organic chemistry

PREREQUISITES (IF APPLICABLE)

LEARNING GOALS

The learning goals are all the knowledges related to the chemical constituents of grapes and wine, the main winemaking technologies and the evolution of chemical compounds of enological significance during the production and aging of wine.

EXPECTED LEARNING OUTCOMES (DUBLIN DESCRIPTORS)

Knowledge and understanding

The student must be able to understand all issues related to wine chemistry and be able to discuss on the quality of the raw material and the oenological role of each of the components of grapes and wine

The student must demonstrate that he is able to evaluate the impact of the different grape compounds on the characteristics of the wine and to define winemaking protocols aimed at enhancing the quality of the raw material. The student must also be able to identify and apply the analytical methods and procedures for the quality control of the grapes and the optimization of the winemaking process.

Applying knowledge and understanding

The student must be able to independently evaluate the chemical and biochemical processes that regulate the transformation from grape to wine and critically evaluate any actions to be taken to achieve specific and predetermined production objectives.

The student must be able to explain the basic notions of oenological chemistry and winemaking technology to non-experts. He must be able to summarize in a complete but concise way the results achieved using the technical language correctly, familiarizing himself with the terms of the discipline and potentially transmitting to a non-technician the knowledge acquired on the chemical basis of the quality of grapes and wines and on the winemaking processes.

COURSE CONTENT/SYLLABUS

1. Chemical constituents of grapes (2 CFU) - Nature, properties, variation during ripening and oenological role of sugars, organic acids, polyphenols, aromas, pectic substances, nitrogenous substances, enzymes, vitamins and minerals.
2. Chemical constituents of grapes (2 CFU) - Nature, properties, variation during ripening and oenological role of pectic substances, nitrogenous substances, enzymes, vitamins and minerals.
3. Transformation of the raw material (1 CFU) - Biochemistry of fermentation and technological factors influencing the activity of wine micro-organisms.
4. Use of sulfur dioxide in musts and wines (2 CFU) - The chemistry of SO₂; combination mechanisms; antimicrobial and antioxidant properties; methods of use in winemaking.

READINGS/BIBLIOGRAPHY

Ribereau-Gayon P., Glories Y., Maujean A., Dubourdieu D. Trattato di enologia. 2003. Ed. Ed agricole. Luciano Usseglio Tomasset. Chimica Enologica. 1996. Ed. AEB Brescia. Metodi Ufficiali di Analisi. www.oiv.int. Waterhouse, A., Sacks, G., & Jeffery, D. (2016). Understanding Wine Chemistry. John Wiley & Sons.

TEACHING METHODS

Describe how teaching activities are deployed: lectures, classes, exercises, laboratory, stages, seminars, others.

If applicable also list tools for teaching delivery (recorded lectures, multimedia, software, on line material, etc.)

Example:

“Teacher/s will use: a) lectures for approx..XXX % of total hours; b) practical exercises for approx..XXX % of total hours or CFU; c) laboratories to further elaborate on applied knowledge for approx..XXX % of total hours or CFU; d) seminars, e) stages, d)other, to elaborate on specific themes for approx..XXX % of total hours or CFU”

EXAMINATION/EVALUATION CRITERIA

a) Exam type:

Exam type	
written and oral	
only written	
only oral	
project discussion	
other	

In case of a written exam, questions refer to: (*)	Multiple choice answers	
	Open answers	
	Numerical exercises	

(*) multiple options are possible

It may be useful to indicate number and kind of exam steps that account for the final evaluation of the student, and intermediate exams during the course, and when they take place (at the beginning, in the middle or at the end of the course), as well as the learning outcomes that each evaluation step wishes to address, and their relative weight on the final evaluation.

b) Evaluation pattern:

[this field needs to be filled in only when there are different weights among written and oral exams, or among modules if this refers to an integrated course]

Please indicate if the written exam performance is binding to have access to the oral exam, and provide (if applicable) relative weights of written and oral exams.

In case of multiple choice written exam, it would be useful to mention how the final mark takes into account the number and the correctness of all answers.

In case of integrated courses, please specify how different modules account for the final evaluation of the student (for instance "the oral exam consists of XXX questions [YYY for each module]"; "the final mark will be weighted on CFU of each module and therefore will be made up of: Module XXX ... 3 CFU 20%; Module YYY 6CFU 40%, Module ZZZ 6 CFU 40%" etc.