INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Stabilization and Conservation Technologies			Field of study	Food Industries								
Bachelor in	Oenology			School	School of Agriculture								
Academic Year	2023/2024	Year of study	3	Level	1-3	ECTS credits	6.0						
Type	Semestral	Semester	2	Code	9998-705-3203-00-23								
Workload (hours)	162	Contact hours	T 30	TP -	PL 30	TC -	S -	E -	OT 4	O -			

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Ana Claudia Ferreira Alves, António Castro Ribeiro

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Know the compounds of wine and identify the instability factors
2. Know the main mechanisms involved in the evolution and transformation of wine
3. Apply the technologies for clarification of musts and wines appropriate to each situation
4. Know the methods for assessing wine instability and stabilization technologies
5. Know the bottling process and quality control at the various stages

Prerequisites

Before the course unit the learner is expected to be able to:
know the basics of oenological chemistry

Course contents

Wine compounds. Evolution and physicochemical transformations of wine. Must and wine clarification technologies: fining, flotation, filtration and centrifugation. White wine protein stabilization; tartaric, microbiological, metallic and coloring matter stabilization. Instability assessment tests and stabilization technologies. Sensory defects: mitigation and stabilization strategies. Aging and conservation. Bottling; Quality control of wines.

Course contents (extended version)

1. Wine compounds. Evolution and physicochemical transformations.
2. Must and wine clarification technologies
   - Fining - fining agents, mechanisms of action of fining agents, use of fining agents
   - Flotation: Theoretical concepts, technique and types of equipment
   - Filtration - mechanism of filtration, filter products and filter types
   - Centrifugation: Theoretical concepts of centrifugation; Types of centrifuges
3. Protein stabilization
   - Factors that influence protein stability
   - Protein stability assessment
   - Wine protein stabilization technologies
4. Tartaric stabilization
   - Tartaric precipitations: crystallization process; Factors affecting crystallization
   - Tartaric stability evaluation tests: Cold test; 'Mini-Contact' test Wurdig's test
   - Tartaric stabilization technologies
5. Microbiological stabilization
6. Metallic stabilization
   - Ferric and cupric casses
7. Stabilization of colloidal coloring matter
8. Wine Aging
   - Factors affecting aging; precipitation formation and other transformations
9. Bottling: Filling, corking, labeling, capping and packaging

Recommended reading

1. Cardoso, A. D. 2020. O vinho da Uva à Garrafa. 2ª Edição Agrobook. Portugal.
2. Cosme, F. ; Filipe-Ribeiro, L. ; Nunes, F. 2020 Wine Stabilisation An Overview of Defects and Treatments In Chemistry and Biochemistry of Winemaking, Wine Stabilization and Aging, InTech Open, 1-32 pp
3. Jackson, R. S. 1994. Wine Science. Principles and Applications. Academic Press. Califomia USA.
4. Ribéreau Gayon, P. ; Glories Y. ; Maujean A. ; Dubourdieu D. 2006. Handbook of enology. The Chemistry of Wine Stabilization and Treatments, Second Edition, Vol. I e II, John Wiley & Sons; New York.
5. Togores, J. H. 2003. Tratado de enologia. Tomo I e II. Ediciones Mundi-Prensa, Madrid.

Teaching and learning methods

Theoretical classes for the acquisition of knowledge about the technologies of wine clarification, stabilization and conservation. Practical classes for the application of theoretical concepts; execution of practical laboratory work. Preparation of reports of the practical work.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
   - Practical Work - 40%
   - Intermediate Written Test - 30%
   - Final Written Exam - 30%
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
   - Final Written Exam - 100% (Theoretical component (60%) Practical component (40%))

Language of instruction

Portuguese

Electronic validation

Ana Claudia Ferreira Alves, António Castro Ribeiro	João Luís Verdial Andrade	António Castro Ribeiro	José Carlos Batista Couto Barbosa
01-02-2024	03-02-2024	03-02-2024	03-02-2024