# UNIVERSITÀ DEGLI STUDI DI PALERMO

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| **DEPARTMENT** | Scienze Agrarie, Alimentari e Forestali |
| **ACADEMIC YEAR** | 2017/2018 |
| **BACHELOR'S DEGREE (BSC)** | VITICULTURE AND OENOLOGY |
| **SUBJECT** | OENOLOGICAL PROCESSES AND SPECIAL VINIFICATIONS |
| **TYPE OF EDUCATIONAL ACTIVITY** | B |
| **AMBIT** | 50120-Discipline dell'ingegneria agraria, forestale e della rappresentazione |
| **CODE** | 15444 |
| **SCIENTIFIC SECTOR(S)** | AGR/15 |
| **HEAD PROFESSOR(S)** | CORONA ONOFRIO Professore Ordinario Univ. di PALERMO |
| **OTHER PROFESSOR(S)** | |
| **CREDITS** | 9 |
| **INDIVIDUAL STUDY (Hrs)** | 135 |
| **COURSE ACTIVITY (Hrs)** | 90 |
| **PROPAEDEUTICAL SUBJECTS** | 01900 - GENERAL AND INORGANIC CHEMISTRY<br>01933 - ORGANIC CHEMISTRY |
| **MUTUALIZATION** | |
| **YEAR** | 3 |
| **TERM (SEMESTER)** | 1° semester |
| **ATTENDANCE** | Mandatory |
| **EVALUATION** | Out of 30 |
| **TEACHER OFFICE HOURS** | **CORONA ONOFRIO**<br>Monday 12:00 13:00 Dipartimento Scienze Agrarie, Alimentari e ForestaliViale delle Scienze, 13 (Edificio 4, Igresso E), studio 151, 90128 Palermo<br>Tuesday 12:00 13:00 Dipartimento Scienze Agrarie, Alimentari e ForestaliViale delle Scienze, 13 (Edificio 4, Igresso E), studio 151, 90128 Palermo<br>Wednesday 12:00 13:00 SEDE CdL Viticoltura ed Enologia o Piattaforma Teams<br>Thursday 12:00 13:00 SEDE CL Viticoltura ed Enologia Via Dante Alighieri, 120 (Studio 5) - 91025 Marsala |

**DOCENTE:** Prof. ONOFRIO CORONA

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| **PREREQUISITES** | In order to successfully attend this course it is desirable that the student has acquired the skills and knowledge that come from basic courses: mathematics, physics, general and inorganic chemistry, organic chemistry, biochemistry, biological processes in oenology and oenological microbiology. Also desirable are the knowledge of at least decent English and the ability to use the internet for research and information management. |
| **LEARNING OUTCOMES** | Knowledge and understanding<br>The advanced tools for understanding the biological and biochemical phenomena that occur in different parts of the berry during the ripening of the grapes during the winemaking process, stabilization and conservation of the wines. Ability to use the specific and detailed language on wine industry.<br>Applying knowledge and understanding<br>The ability to recognize and organize autonomously the most suitable transformation process to the type of product to be processed and the processing to be performed in order to obtain a healthy and stable product over time.<br>Making judgments<br>Being able to evaluate the implications and results of chemical, physical and sensory controls in order to decide the necessary actions.<br>Communication skills<br>Ability to present the results of oenological studies, even a non-expert public. Ability to support the common interest issues of quality and food safety.<br>Learning ability<br>Ability to update by consulting the scientific publications of the chemical industry of oenological processes and winemaking techniques. Ability to follow, using the knowledge acquired in the course, second level master, both in depth courses both specialized seminars in the field of wine and wine-making techniques processes sector. |
| **ASSESSMENT METHODS** | A) During lessons discussions are dedicated to the topic of the lesson aiming (ongoing evaluation) to verify the learning outcomes and the achievement of specific objectives. These discussions allow to demonstrate the acquisition of knowledge, but also to be able to apply knowledge and understanding. Furthermore they stimulate the independence of opinion and judgement, contextually improving the ability of speaking using appropriate technical language and of debating with peers on the base of appropriate and motivated technical reasonings. At the end of the course to each student is assigned a keyword: the student must demonstrate the ability to find scientific papers related the keyword assigned and present the topic in short power point.<br>B) The exam is an oral discussion of about 40 minutes and provides open questions (3-5) on the topics treated in the lesson and in the exercises. The assessment is carried out in thirty (ongoing evaluation max 10/30, present the topic max 10/30, oral discussion max 10/30). C) To pass the exam, then get a score of not less than 18/30, the student must demonstrate a basic achievement of the goals. The objectives achieved are considered elementary when examining / demonstrates that they have acquired a basic knowledge of the topics described in the program, is able to operate with minimal links between them, shows that they have acquired a limited degree of autonomy; His language is enough to communicate with the examiners. To achieve a score of 30/30 and praise, the student must demonstrate that he has achieved the objectives well. The goals achieved are considered excellent when examining / acquiring the full knowledge of the subjects of the program, demonstrating how to apply the acquired knowledge also in different / new / advanced contexts as opposed to those of the teaching itself, is expressed with lexical competence Also within the specific reference language and is capable of elaborating and expressing independent judgments based on acquired knowledge. |
| **EDUCATIONAL OBJECTIVES** | The course provides knowledge about: the chemical and physical processes associated with the ripening of the grapes, the collection and transportation of grapes from the vineyard to the cellar; the processing techniques of the grapes for the preparation of the wort and the crushed grapes for wine making; management techniques of the alcoholic fermentation and the malolactic fermentation. They will investigate issues related to innovative processes in the wine industry, and introduce students to the knowledge of the interventions to be taken after careful evaluation of the raw material to be transformed, and enological objectives. Provide knowledge of the red wines aging techniques, rosé and white wines in oak barrels and steel, the role of lies in aging, the different enological adjuvants and their use in wine making as stabilizers, clarifiers, activators and adjuvants in general. The course also aims to introduce the student to the understanding of |

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| | special winemaking techniques (sparkling wine, grape withering and production of dessert wines, production of fortified wines). |
| **TEACHING METHODS** | frontal lessons (60 hours)<br>Exercises in the classroom and in the laboratory, visit Training Seminar 30 hours |
| **SUGGESTED BIBLIOGRAPHY** | -Corona O. Appunti dalle lezioni, dispense, pubblicazioni scientifiche.<br>-P. Ribereau-Gayon, D. Duboudieu, B. Doneche, A. Lonvaud. Trattato di Enologia vol. I, Edizione italiana Edagricole, Bologna<br>-P. Ribereau-Gayon, D. Duboudieu, B. Doneche, A. Lonvaud. Trattato di Enologia vol. II, Edizione italiana Edagricole, Bologna<br>-Tullio De Rosa. Tecnologia dei vini liquorosi e da dessert Edizione AEB Brescia |

## SYLLABUS

| Hrs | Frontal teaching |
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| 1 | Aims of the discipline and its subdivision. Organization of the course, mode of evaluation |
| 2 | Grape composition at different stages of the maturation process (grape maturation cycle). |
| 2 | Relationship between the grape composition and wine quality. |
| 2 | Variables that influence the composition of grapes (vineyard management, environment, variety, ..) |
| 3 | Chemical and biochemical processes associated with the harvest and transportation of grapes |
| 3 | Correction of the must composition |
| 3 | Preparation process of the wort for the red wine making and for the production of rosé wines |
| 3 | Management of maceration and the alcoholic and malolactic fermentation in red wine making |
| 2 | Red wine vinification with delayed extraction of anthocyanins |
| 2 | Red wine vinification with initial separate fermentation of part of the must from the solid parts of grape |
| 3 | Maturation of red wines with continuous oxygenation (micro, storage in wooden casks) or discontinuous (periodic decanting) |
| 3 | Vinification by carbonic maceration and anaerobic metabolism of berry |
| 3 | Preparation processes of the wort for the vinification white |
| 3 | Fermentation management in white winemaking |
| 3 | White wine vinification with iperoxidation the must |
| 3 | White wine vinification defense of the must from oxidation reactions, the protection and the development of aromas thiol |
| 3 | Sur lies maturation of white wines, red and rosé wines |
| 3 | The tannins, the oak chips and wood in winemaking. |
| 2 | Alterations and defects of wines |
| 2 | Physical and chemical stabilization of wine |
| 2 | Tartaric stabilization of wines: conventional and unconventional |
| 2 | Enological coadjuncts and their use (stabilizers, clarifiers, enzymes, activators, adjuvants and additives in general) |
| 2 | Production of Champagne and Sparkling wines with methods: Champenoise and Charmat. |
| 3 | Techniques of drying and production of sweet wines |

| Hrs | Practice |
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| 10 | Visit to cellars |

| Hrs | Workshops |
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| 20 | Exercize in laboratory |