

## Syllabus

### Course description

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| <b>Course title</b>      | Protection and valorization of viticultural systems in mountain areas |
| <b>Course code</b>       | 44619   |
| <b>Scientific sector</b> | AGR 12, AGR 13, AGR/10  |
| <b>Degree</b>            | Master in Viticulture, Enology and Wine Marketing                     |
| <b>Semester</b>          | 1 <sup>st</sup>   |
| <b>Year</b>              | II  |
| <b>Academic year</b>     | 2022/23   |
| <b>Credits</b>           | 10  |
| <b>Modular</b>           | Yes   |

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| <b>Total lecturing hours</b> | 56  |
| <b>Total lab hours</b>       | 36  |
| <b>Total exercise hours</b>  |   |
| <b>Attendance</b>            |   |
| <b>Prerequisites</b>         |   |
| <b>Course page</b>           | <a href="#">Course Offering - Master in Viticulture, Enology and Wine Marketing / Free University of Bozen-Bolzano (unibz.it)</a> |

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| <b>Specific educational</b> | Sustainable management of mountain viticulture within landscape valorization |
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| <b>objectives</b> | <p>The course aims to create a professional figure able to insert a winery in a sustainable mountain environment and in accordance with the landscape</p> <p>The course aims to provide general criteria for the correct design of a winery and the role of the oenologist carried out in this area. It will also provide a picture of different technologies available to a modern winery and the inclusion of the whole in the mountain landscape.</p> |
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| <b>Module title 1</b>    | 44619A Plant pathogens and disease management strategies in vineyards in mountain area |
| <b>Course credits</b>    | 3 ECTS   |
| <b>Scientific sector</b> | AGR/12   |
| <b>Credits</b>           | 3 ECTS   |

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| <b>Total lecturing hours</b>        | Frontal lectures: 16 h                                      |
| <b>Total lab and exercise hours</b> | Exercises: 12 h   |
| <b>Attendance</b>                   | Not compulsory  |
| <b>Prerequisites</b>                | -   |
| <b>Course page</b>                  | -   |
| <b>Lecturer</b>                     | Selena Tomada (Free University of Bozen-Bolzano)            |
| <b>Teaching language</b>            | English   |
| <b>Office hours</b>                 | Upon arrangement by email (Wednesday from 5 p.m. to 6 p.m.) |

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| <p><b>Targeted learning outcomes:</b></p> | <p>Students will gain in-depth knowledge of abiotic disorders and the biology of the most important grapevine pathogens, understanding how plant pathogens and their host plants interact in the environment. They will also be able to recognise and identify symptoms of disorders and symptoms and signs of diseases and formulate hypotheses about the causes of disorders and diseases. Furthermore, students will gain the ability to make informed judgments about the appropriate diagnostic technique and the develop of a strategy to control grapevine disorders and diseases.</p>  |
| <p><b>Content:</b></p>                    | <p>The course will start with an outline of grapevine disorders and diseases with epidemic potential. Subsequently, the course will focus on the most important grapevine diseases caused by viruses and viroids, bacteria and phytoplasmas, oomycetes and fungi, and nematodes. Special focus will be given to the disease epidemiology and the environmental factors potentially favouring the development of infectious grapevine diseases in mountain areas. Disease control strategies in integrated and organic farming systems will be covered, including the application of disease forecasting and expert systems as well as the reference legislation for the production and marketing of vine propagation materials. A focus on the most innovative biocontrol techniques will follow together with an overview of the plant protection product registration process. The grapevine disorders caused by environmental factors will be discussed, and great attention will be given to the situation in mountain areas. Finally, the importance of advanced diagnostic tools for the prevention and containment of grapevine diseases will be discussed and implemented in the laboratory.</p> |
| <p><b>Teaching format</b></p>             | <p>PowerPoint presentations and case studies</p>   |
| <p><b>Exam form:</b></p>                  | <p>Oral exam (60%) and students' project work (40%) assessed through a presentation and technical assignments to be developed in groups. To pass the module, both the written exam and the project work must be assessed with a positive mark.</p>   |
| <p><b>Literature:</b></p>                 | <p>Agrios, GN (2005). Plant Pathology, Fifth edition. Elsevier LDT, Oxford, 921 pages. ISBN 978-0120445653<br/> Bettiga, LJ (Ed.). (2013). Grape Pest Management, Third edition. University of California - Agriculture and Natural Resources Publications, 609 pages. ISBN 978-1601078001<br/> Wilcox, WF, Gubler, WD, Uyemoto JK (Eds.). (2015).</p>   |

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|  | Compendium of Grape Diseases, Disorders, and Pests, Second edition APS Press. 232 pages, ISBN 978-0890544792<br>Additional reviews and articles related to the topics of the module will be provided by the lecturer |
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| <b>Module 2</b>                          | 44619B MANAGEMENT AND USE OF AGROCHEMICALS AND THEIR FATE IN THE ENVIRONMENT (3 ECTS)   |
| <b>Lecturer</b>                          | Youry Pii   |
| <b>Scientific sector of the lecturer</b> | AGR/13  |
| <b>Teaching language</b>                 | English   |
| <b>Office hours</b>                      |   |
| <b>List of topics covered</b>            | <p>Classification of agrochemicals.</p> <p>Agrochemicals and their metabolism within cells: mode of action of fungicides (interference with respiration, biosynthesis of sterols, chitin, tubulin and nucleic acids); mode of action of insecticides (neurotoxic and decoupling insecticides); mode of action of herbicides (interference with photosynthesis, biosynthesis of amino acids and biosynthesis of lipids).</p> <p>Agrochemicals metabolism in plants: reactions of oxidations, reduction, hydrolysis and conjugation.</p> <p>Agrochemicals fate in soil: movement (leaching, run-off, volatilization), adsorption (adsorption isotherms and adsorption coefficients) and degradation (photodecomposition, chemical and microbiological degradations).</p> <p>European and Italian legislation of agrochemicals, labeling and their storage.</p> <p>Practical exercise: determination of agrochemical adsorption and agrochemical degradation in soils.</p> |
| <b>Teaching format</b>                   |   |

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| <b>Learning outcomes</b> |  |
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| <b>Assessment</b>  |         |
| <b>Assessment language</b>                                 | English |
| <b>Evaluation criteria and criteria for awarding marks</b> |         |

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| <b>Literature</b> | Gennari M. and Trevisan M. "Agrofarmaci - Conoscenze per un uso sostenibile" ISBN 978-88-8372-444-2<br>Müller F. "Agrochemicals : composition, production, toxicology, applications" ISBN 3-527-29852-5<br>Roberts T.R. "Metabolic pathways of agrochemicals" ISBN 0-85404-494-9;ISBN 0-85404-499-X |
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| <b>Module 3</b>                          | 44619C Management and design of wineries in the mountain landscape (4 ECTS)     |
| <b>Lecturer</b>                          | Rino Gubiani, rino.gubiani@uniud.it   |
| <b>Scientific sector of the lecturer</b> | AGR/10  |
| <b>Teaching language</b>                 | English   |
| <b>Office hours</b>                      | Upon arrangement by email   |
| <b>Teaching assistant (if any )</b>      | -   |
| <b>Office hours</b>                      | -   |
| <b>List of topics covered</b>            | Mountain landscape, winery design, plant layout of winery, project of buildings |
| <b>Teaching format</b>                   | Frontal lectures, visit wineries, project of winery.                            |

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| <b>Learning outcomes</b> | The course aims at providing students with the knowledge and expertise on the harmonization of the instrumental buildings (cellars and storage warehouses) and any process plants destined to remain in outdoor areas with the typical rural architecture of a given territory. The |
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|  | <p>landscape design of the resources in charge of a winery will necessarily have to concern also the integration of all the infrastructural aspects of the land structures that must be carefully integrated with the existing environment, minimizing the negative effects related to visual quality, as well as any acoustic and olfactory impacts.</p> <p>Knowledge and understanding</p> <p>Applying knowledge and understanding</p> <p>Making judgments</p> <p>Communication skills</p> <p>Learning skills</p> |
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| <b>Assessment</b>  | The final evaluation will consist of a graphic design of a winery on which the oral exam will focus, which will consist of a) questions to assess the knowledge and understanding of the topics discussed during the lessons and b) questions to establish the ability to apply this knowledge to hypothetical cases studies. The final grade will be assigned based on the following criteria: clarity of the answer, ability to summarize, evaluate and establish relationships between topics.   |
| <b>Assessment language</b>                                 | English   |
| <b>Evaluation criteria and criteria for awarding marks</b> | <p>Admission, final mark, sum of marks from partial assessments, etc.</p> <p>In case of partial assessments: weighting of parts (e.g., 20% oral and 80% written; 50% written and 50% lab, ...), threshold for individual assessments.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• relevant for assessment 1: clarity of answers, mastery of language (also with respect to teaching language), ability to summarize, evaluate, and establish relationships between topics;</li> <li>• relevant for assessment 2: ability to work in a team, creativity, skills in critical thinking, ability to summarize in own words</li> </ul> |

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| <b>Required readings</b> |  |
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| <b>Supplementary readings</b> |  |
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