Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

# MASTER IN VITICULTURE, ENOLOGY AND WINE MARKETING (VEM)

## Courses offered at unibz in the 3rd semester 2018/2019

Specialisation: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization (20 ECTS + 10 ECTS Optional Courses)

Update: June 2018

| Modules and courses (all offered in the 3rd Semester) | ECTS C.P. |
|---|---|
| **Agrochemicals in vineyard pest-management and environment-landscape in mountains areas** | **10** |
| **(10 CP ·44613)** | |
| Plant pathology defence in vineyards in mountain areas (3 CP · 44613A · AGR/12) | 3 |
| Management and use of agrochemicals and their fate in the environment (3 CP · 44613B · AGR/13) | 3 |
| Mountain viticulture and landscape (4 CP · 44613C · AGR/10) | 4 |
| **Vineyard management and wine production in mountain areas** | **10** |
| **(10 CP ·44614)** | |
| Vineyard management in mountain areas (3 CP · 44614A · AGR/03) | 3 |
| Vineyard mechanization in mountain areas (4 CP · 44614B · AGR/09) | 4 |
| Wine production processes and plants (3 CP · 44614C · AGR/15) | 3 |

| Optative Courses | |
|---|---|
| **Management of soil fertility in mountain vineyards** **(5 CP ·44617)** | **5** |
| Chemistry of fertilizers and mineral nutrition of grapevine (3 CP · 44617A · AGR/13) | 3 |
| Soil and water management in grapevine production (2 CP · 44617B · AGR/03) | 2 |
| **Characterization of mountain wines** **(5 CP ·44618)** | **5** |
| Sensory analysis approaches for mountain wines (3 CP · 44618A · AGR/15) | 3 |
| Fermentation processes for the production of mountain wines (2 CP · 44618B · AGR/16) | 2 |

**UNIVERSITÀ DEGLI STUDI DI UDINE**

**UNIVERSITÀ DEGLI STUDI DI PADOVA**

**UNIVERSITÀ DEGLI STUDI DI VERONA**

**LIBERA UNIVERSITÀ DI BOLZANO**

# SYLLABI OF THE COURSES

## Module group:

## Agrochemicals in vineyard pest-management and environment-landscape in mountain areas

| **Module name** | **Plant pathology defence in vineyards in mountain areas** |
|---|---|
| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 1st semester (=3rd semester) |
| Module group coordinator: | Pii, Youry (Free University of Bozen-Bolzano) |
| Lecturers: | Baric, Sanja (Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Agrochemicals in vineyard pest-management and environment-landscape in mountain areas (Free University of Bozen-Bolzano) |
| Teaching format: | The frontal lectures are combined with interactive elements, such as descriptive case examples and discussions. In the practical part, selected contents covered in the lectures, are examined in greater depth in the field and/or in the laboratory. Short project papers on a topic of choice will be prepared by the students and presented to the class. |
| Workload: | Frontal lectures: 16 h;<br>Laboratory exercises and field trips: 12 h; |
| Credit points: | 3 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | Students will gain in-depth knowledge on abiotic disorders and on the biology of the most important pathogens and parasites of grapevine, and understand 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 develop a strategy for control of grapevine disorders and diseases. |
| Content: | The course will start with an outline of grapevine disorders and diseases with epidemic potential. Subsequently the course will |

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| | focus on grapevine disorders caused by environmental factors and put special emphasis on the situation in mountain areas. An in-depth treatment of the most important grapevine diseases caused by viruses and viroids, bacteria and phytoplasmas, oomycetes and fungi, and nematodes will follow, with special focus on 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. Finally, the importance of advanced diagnostic tools for the prevention and containment of grapevine diseases will be discussed and implemented in the laboratory. |
| Exam achievements: | Written exam (70%) and students' project work (30%) assessed through a presentation and a short paper. To pass the module, both the written exam and the project work must be assessed with a positive mark. |
| Forms of media: | PowerPoint presentations and case studies |
| Literature: | 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). 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 |
| Update: | June 2018 |

| **Module name** | **Management and use of agrochemicals and their fate in the environment** |
|---|---|
| Academic Year: | 2nd academic year at University of Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Youry Pii (Free University of Bolzano) |
| Lecturers: | Youry Pii (Free University of Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Agrochemicals in vineyard pest-management and environment-landscape in mountains areas (Free University of Bolzano) |
| Teaching format: | Regular lectures |
| Workload: | Face to face lectures: 16 h;<br>Laboratory exercise: 12 h; |

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| Credit points: | 3 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | The course aims at providing students with the knowledge and expertise on the agrochemicals modes of action and the fate of these chemicals in the agro-ecosystem, with specific reference to vineyard applications. This knowledge will allow the sustainable management of this agricultural practice for the protection of grapevine. |
| Content: | Classification of agrochemicals.<br>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).<br>Agrochemicals metabolism in plants: reactions of oxidations, reduction, hydrolysis and conjugation.<br>Agrochemicals fate in soil: movement (leaching, run-off, volatilization), adsorption (adsorption isotherms and adsorption coefficients) and degradation (photodecomposition, chemical and microbiological degradations).<br>Management of the principal diseases and parasites in vineyards through the distribution of phytosanitary products. Formulation of agrochemicals and labeling.<br>Practical exercise: determination of agrochemical adsorption and agrochemical degradation in soils. |
| Exam achievements: | The final assessment will consist in an oral exam, which will consist in a) questions to evaluate the knowledge and understanding of the topics discussed during the classes and b) questions aimed at establishing the ability to apply such knowledge to hypothetical case studies in grapevine production. The ability to rework the experience acquired during laboratory exercises will also be evaluated.<br>The final mark will be awarded based on the following criteria: the clarity of the response, the ability to summarize, evaluate, and establish relationships between topics. |
| Forms of media: | Power point presentation and blackboard |
| Literature: | 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 |
| Update: | June 2018 |

| **Module name** | **Mountain viticulture and landscape** |
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| Academic Year: | 2nd academic year at University of Bolzano |

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| Semester: | 3rd Semester |
| Module group coordinator: | Youry Pii (Free University of Bolzano) |
| Lecturers: | Contract Professor (Free University of Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Agrochemicals in vineyard pest-management and environment-landscape in mountains areas (Free University of Bolzano) |
| Teaching format: | Regular lectures |
| Workload: | Face to face lectures: 24 h;<br>Laboratory exercise / study visits: 12 h; |
| Credit points: | 4 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | 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 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. |
| Content: | Definition of the concept of "landscape unit", to be analyzed through multidimensional methods by first evaluating indicators related to the so-called "structural factors" (degree of incorporation into the plot of the building, degree of isolation from the rest of the local agro-eco-landscape, dimensional classes of the company's structural resources) to be combined with other indicators of different nature (related to natural, environmental, historical and aesthetic aspects). Aspects of deepening in terms of infrastructure resources will concern, for example, the adjustment of the rural road network on farm roads to be integrated with the existing road network to allow the transit of agricultural vehicles without damage to the road cover due to the presence of tracks (very recurrent in the hilly and mountainous area). |
| Exam achievements: | The final assessment will consist in an oral and/or written exam, which will consist in a) questions to evaluate the knowledge and understanding of the topics discussed during the classes and b) questions aimed at establishing the ability to apply such knowledge to hypothetical case studies. The final mark will be awarded based on the following criteria: the clarity of the response, the ability to summarize, evaluate, and establish relationships between topics. |

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| Forms of media: | Power point presentation and blackboard |
| Literature: | Keynotes provided by the lecturer;<br>Mountain and Steep Slope Viticulture (ISBN 9788890233036)<br>http://vit.entecra.it/sito_cong2/atti_en.html |
| Update: | June 2018 |

## Module group:
## Vineyard management and wine production in mountain areas

| **Module name** | **Vineyard Management in Mountain Areas** |
|---|---|
| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Carlo Andreotti (Free University of Bozen-Bolzano) |
| Lecturers: | Carlo Andreotti (Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Vineyard management and wine production in mountain areas (Free University of Bozen-Bolzano) |
| Teaching format: | Regular lectures, exercises in open field (vineyards) and visits to wine producing farms in mountain areas |
| Workload: | Lectures: 16 hours;<br>Exercises: 12 hours;<br>Student's personal study time in the module: 45 h |
| Credit points: | 3 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | Students should have at least a basic knowledge of arboriculture and general viticulture. |
| Targeted learning outcomes: | The course will provide students with scientific and technical knowledge on the main aspects related to the management of vineyards located in mountain areas. Students will understand and critically consider the main factors involved in mountain environment and their consequences on grapevine physiology and cultural management. Finally, students will learn how the exploitation of the mountain conditions can lead to an enhancement of the final quality of grapes, while maintaining yield level and overall sustainability. |
| Content: | Course contents are as follows: |

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| | - The altitude effect on vineyard microclimatic conditions: role of temperature, daily temperature excursion, light intensity and quality, exposition.<br>- The effect of altitude on grape quality.<br>- Cultural management of mountain vineyards: site preparation in steep slope conditions (contour farming, up- down the slope, terracing systems), means against soil erosion (cover crops, tilling, etc.), canopy management (grapevine training systems for steep slopes conditions and in relation with vineyard exposition).<br>- Protection against adverse meteorological conditions (late frost, early frost, too high radiation, sunburn damages).<br>- Sustainable use of water and nutrients inputs in sloped vineyards.<br>- Climate change and mountain viticulture (DOC modification, adaptation to warmer conditions, control of ripening dynamic of grapes, exploitation of new areas at higher altitudes).<br>- Selection of new cultivars potentially suitable for mountain environment. |
| Exam achievements: | Oral exam |
| Forms of media: | Power point slides |
| Literature: | There are no specific textbooks on the course topics. The lecturer will provide students with the pdf of the lectures and with selected papers from the international literature on the subject. |
| Update: | June 2018 |

| **Module name** | **Vineyard Mechanization in Mountain Areas** |
|---|---|
| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Andreotti, Carlo (Free University of Bozen-Bolzano) |
| Lecturers: | Liberatori, Sandro (Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Vineyard management and wine production in mountain areas (Free University of Bozen-Bolzano) |
| Teaching format: | Regular lectures, web platform, team working and group project, visit of manufacturing plants and farms. |
| Workload: | Lectures: 24 hours;<br>Exercises: 12 hours;<br>Student's personal study time in the module: 60 h |

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| Credit points: | 4 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | Provide students with basic knowledge on mechanization in mountain areas, specific knowledge on safety requirements and performances of machines, homologations and use according to environment protection and high quality production, evaluation of innovation and transfer of technologies. Being able to apply standard requirements in the design and evaluation of machines, provide for a proper use of machines, to measure the level of innovation and provide for technology transfer. |
| Content: | International standards and their application in the field of performances, safety and environment protection related to machines, the use of machines for quality production, measurement of the level of innovation of machines, technology transfer. |
| Exam achievements: | 1/3 oral examination, 1/3 group work, 1/3 written examination; 25% skill to properly set a problem, 25% skill to find a solution, 25% level of knowledge of the topics, 25% ability for presentations |
| Forms of media: | Power point slides, web platform |
| Literature: | Course material by the lecturer |
| Update: | June 2018 |

| **Module name** | **Wine production processes and plants** |
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| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Andreotti, Carlo (Free University of Bozen-Bolzano) |
| Lecturers: | Boselli, Emanuele (Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialisation Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Vineyard management and wine production in mountain areas (Free University of Bozen-Bolzano) |
| Teaching format: | Regular lectures; laboratory practice, visits to wineries and specialized companies |
| Workload: | Face to face lectures: 16 h;<br>Visits of wineries, specialized companies and/or laboratory practice 12 h; |
| Credit points: | 3 ECTS |

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| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | The students can manage adequately the different wine production processes and plants with emphasis on *extreme wines* |
| Content: | Fundamentals of wine production processes and related plants: red-wine like, white-wine like, rosè wines, carbonic maceration, natural sparkling wines, special wines such as raisin wines and fortified wines. Applications of winemaking processes to areas where altitude leads to difficult climatic conditions, and steep slopes (even at lower altitude) limit the possibilities for using the land and lead to an increase in the cost of working. Key features of *extreme wines* produced with white (Gewürztraminer, Chardonnay, Pinot blanc, Pinot gris, Sauvignon, Müller-Thurgau, Sylvaner, Kerner, Riesling, Veltliner, Moscato) and red (Lagrein, Pinot Noir, Merlot, Cabernet Sauvignon, Cabernet Franc and Moscato rosa) varieties.<br>Production processes of other *extreme wines* of the world (Beaujolais, Port wine, Cinque Terre, Eiswein/ice wine, Pecorino and *spumante* wines).<br>Techniques to preserve the aroma of extreme wines and to prevent the defects. Practical laboratory experiments and technical visits to specialized external companies and wineries. |
| Exam achievements: | Team project work: power point presentation done in groups on a topic related to the course combined with an individual interview |
| Forms of media: | Power point and blackboard |
| Literature: | Key notes provided by the lecturer in the E-learning platform of unibz;<br>Ribéreau-Gayon P., Dubourdieu D., Donèche B., Lonvaud A. – Handbook of Enology – Vol. I and II – free pdf version available in internet<br>OIV technical standards and documents<br>http://www.oiv.int/en/technical-standards-and-documents<br>Cervim website: http://www.cervim.org/ |
| Update: | June 2018 |

# Optative courses

## Module group:

## Management of soil fertility in mountain vineyards (optative)

| **Module name** | **Chemistry of fertilizers and mineral nutrition of grapevine (optative)** |
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| Academic Year: | 2nd academic year at University of Bolzano |

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| Semester: | 3rd Semester |
| Module group coordinator: | Stefano Cesco (Free University of Bolzano) |
| Lecturers: | Stefano Cesco (Free University of Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: *Management of soil fertility in mountain vineyards* (Free University of Bolzano) (optional) |
| Teaching format: | Regular lectures |
| Workload: | Face to face lectures: 16 h;<br>Laboratory exercise: 12 h; |
| Credit points: | 3 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | The course aims at improving the knowledge about the mechanisms underlying the soil availability, root uptake, translocation and allocation of mineral nutrients in grapevine plants. This knowledge will allow the students to manage the fertilization practices in vineyards according to the physiological needs of plants. |
| Content: | General aspects of ion uptake mechanisms in plants: short (roots) and long (xylem and phloem) transport and allocation. Ion uptake by leaves (mechanisms underlying foliar fertilization). Usable forms in the soil-plant system, specific mechanisms of acquisition, plant contents, metabolic functions, symptoms of deficiency/excess, fertilizers and their field application of macro (N, P, K, Ca, Mg, S) and micronutrients (B, Zn, Fe, Cu) in relation to a sustainable and efficient use of the sources.<br>Practical laboratory exercise on topics discussed during the classes. |
| Exam achievements: | Assessment (*at the end of the course*) is conducted via oral examination that includes a) questions to assess the knowledge and understanding of the course topics and b) questions designed to assess the ability to transfer these skills to case studies of grapevine production. Space will also be dedicated to the evaluation of the ability to rework the experience of the laboratory.<br>Attribution of a single final mark awarded based on the following criteria: the clarity of the response, the ability to summarize, evaluate, and establish relationships between topics, the independence of judgment, the ability to rework. |
| Forms of media: | Power point presentation and blackboard |
| Literature: | Mineral Nutrition of Higher Plants, Ed: Petra Marschner, Academic press, 2012, ISBN: 978-0-12-384905-2 |

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| | The Science of Grapevines, Anatomy and Physiology. Second Edition. Markus Keller Published by Elsevier Inc. 2015, ISBN: 978-0-12-419987-3 |
| Update: | June 2018 |

| **Module name** | **Soil and Water Management in Grapevine Production (optative)** |
|---|---|
| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Cesco, Stefano (Free University of Bozen-Bolzano) |
| Lecturers: | Zanotelli Damiano |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Management of soil fertility in mountain vineyards (Free University of Bozen-Bolzano) (optional) |
| Teaching format: | Regular lectures, exercises in open field (vineyards) and visits to wine producing farms in mountain areas |
| Workload: | Lectures: 12 hours;<br>Exercises: 6 hours; |
| Credit points: | 2 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | Students should have at least a basic knowledge of arboriculture and general viticulture. |
| Targeted learning outcomes: | The course will provide students with scientific and technical knowledge on the main aspects related to soil and water management in vineyards located in mountain areas.<br>Students will consider different irrigation methods and new emerging water management technics which are used to increase water use efficiency, to help regulating canopy vigour and possibly to increase grape quality. Regarding the soil management, students will be provided with knowledge on the current grass management practices in mountain viticulture and the possible benefits deriving from soil amendments application. |
| Content: | The course consists of two sections:<br><u>Section 1: water management</u><br>- Overview of irrigation methods applied in mountain viticulture (drip, subsurface irrigation, fertigation)<br>- Irrigation water management techniques capable to save water, increase its use efficiency and provide other benefits such as control of canopy vigour and possibly |

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| | improve grape quality (deficit irrigation (DI), regulated deficit irrigation (RDI) and partial root drying)<br>- Sensors and technology available to monitor soil water content in the vineyard as well as the soil-plant water status<br><u>Section 2: soil management</u><br>- Overview of mechanical and technical methods for the grass management of both row and inter-row in mountain viticulture.<br>- Possible benefits for soil and water management related to the application of soil amendments |
| Exam achievements: | Oral exam |
| Forms of media: | Power point slides |
| Literature: | There are no specific textbooks on the course topics. The lecturer will provide students with the pdf of the lectures and with selected papers from the international literature on the subject. |
| Update: | June 2018 |

# Module group:
# Characterization of mountain wines (optative)

| **Module name** | **Fermentation processes for the production of mountain wines (optative)** |
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| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Boselli, Emanuele (Free University of Bozen-Bolzano) |
| Lecturers: | Lecturer of the Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Characterization of mountain wines (Free University of Bozen-Bolzano) |
| Teaching format: | Regular lectures; visits of mountain wineries |
| Workload: | Face to face lectures: 12 h;<br>Visits of wineries 6 h; |
| Credit points: | 2 ECTS |
| Requirements under the examination regulations: | ---------- |

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| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | Knowledge and understanding of the role of yeasts and lactic acid bacteria in the wine fermentation processes. The students will be enabled to manage the principles of the fermentation process |
| Content: | Ecophysiology and metabolism of wine yeasts. Yeast selection and their use in wine making. Technology and sensory features of selected yeasts. Lactic acid bacteria and malo-lactic acid fermentation. Selection of lactic acid bacteria and their use in wine making. Effects of the mountain environment on the overall quality of wines. |
| Exam achievements: | The exam consists of a written test |
| Forms of media: | The course is presented in digital format. Presentations, scientific papers and spreadsheets used during the course are provided to students. |
| Literature: | Wine Microbiology: Practical Applications and Procedures, Eds. K.C. Fugelsang and C.G. Edwards, Springer. |
| Update: | June 2018 |

| **Module name** | **Sensory analysis approaches for mountain wines (optative)** |
|---|---|
| Academic Year: | 2nd academic year at the Free University of Bozen-Bolzano |
| Semester: | 3rd Semester |
| Module group coordinator: | Boselli, Emanuele (Free University of Bozen-Bolzano) |
| Lecturers: | Boselli, Emanuele (Free University of Bozen-Bolzano) |
| Language: | English |
| Classification within the curriculum: | Module of specialization: Sustainable Management of Mountain Viticulture within the Alpine Landscape Valorization<br>Module group: Characterization of mountain wines (Free University of Bozen-Bolzano) |
| Teaching format: | Regular lectures; laboratory practice, visits of wineries |
| Workload: | Face to face lectures: 16 h;<br>Visits of wineries or specialized companies and/or laboratory practice 12 h; |
| Credit points: | 3 ECTS |
| Requirements under the examination regulations: | ---------- |
| Recommended prerequisites: | ---------- |
| Targeted learning outcomes: | The students can manage adequately the sensory analysis of wines and other winery products with emphasis on *extreme wines* |

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| Content: | Fundamentals of wine sensory analysis. Physiology of human senses; descriptive analysis; effects of the winemaking technology on the sensory properties of wines. Sensory evaluation of mountain (*extreme*) wines chosen among Gewürztraminer, Chardonnay, Pinot blanc, Pinot gris, Sauvignon, Müller-Thurgau, Sylvaner, Kerner, Riesling, Veltliner, Moscato (white) and Lagrein, Pinot Noir, Merlot, Cabernet Sauvignon, Cabernet Franc and Moscato rosa (red wines). Sensory evaluation of other *extreme wines* of the world chosen among Beaujolais, Port wine, Cinque Terre, Eiswein/ice wine, Pecorino and *spumante* wines. Practical laboratory experiments and technical visits to specialized external companies. |
| Exam achievements: | Team project work: power point presentation done in groups on a topic related to the course combined with an individual interview |
| Forms of media: | Power point and blackboard |
| Literature: | Key notes provided by the lecturer in the E-learning platform of unibz;<br>Review document on sensory analysis of wine by OIV (free pdf file download)<br>Ribéreau-Gayon P., Dubourdieu D., Donèche B., Lonvaud A. – Handbook of Enology – Vol. I and II (free pdf file download)<br>OIV technical standards and documents<br>http://www.oiv.int/en/technical-standards-and-documents<br>Cervim website: http://www.cervim.org/ |
| Update: | June 2018 |