

Oenology II (HORTICULTURE, 4TH YEAR OF STUDY, VII TH SEMESTER)

Credit value (ECTS):5

Course category:

Speciality course (mandatory)

Course holder:

Prof. Valeriu V. COTEA

Discipline objectives (course and practical works)

The oenology course aims to provide students with up-to-date information related to primary vinification, authorized oenological practices, stabilization and conditioning of wines, wine legislation, basic and specific analyzes of wines and derived products, other information that help train the future horticultural engineer.

Specific objectives

- Knowledge, understanding and specialized use of innovative concepts in the wine sector.
- The ability to organize and manage technological processes in the wine industry.
- The ability to understand and interpret the physico-chemical and biological phenomena in oenology.
- Acquiring knowledge on primary winemaking, choosing materials and solutions technology with a price / quality ratio as convenient as possible.

Contents (syllabus)

Course (chapters/subchapters)
CHEMICAL COMPOSITION OF WINES.
Chemical composition of wine. Alcohol in wine. Wine acids. Phenolic compounds in wine. Mineral substances in wine. Wine aldehydes. Acetals and esters in wine.
TECHNOLOGICAL OPERATIONS FOR CARE AND CONDITIONING OF WINES
Technological operations of care and conditioning of wine. Periodic filling of the gaps in the storage vessels. Procedures for storing wine in partially filled vessels. The wine lard. Wine equalization and blending.
EVOLUTION AND STAGES OF WINE DEVELOPMENT
Evolution and development phases of wine. Evolution and development phases of wine. The fermentation phase and the wine formation phase. The wine maturation phase. The main processes that take place during the aging of the wine. Fast processes for wine maturation. Maturation of wines in small oak barrels. The aging phase of the wine. The wine degradation phase.
UNWANTED CHANGES WHICH MAY APPEAR IN WINE
Unwanted changes of the physico-chemical nature in wine. Precipitation of tartaric salts in wines. Feric casse. Copper casse. Protein casse. Oxidative casse.
Precipitation of coloring substances in red wines. Foreign smells and tastes accidentally appeared. Atypical aging of wines. Cork taint.
Unwanted microbiological changes in wine. Wine flor. Wine vinegary. Degradation of tartaric acid. Glycerol degradation. Wine lactic souring. Mousiness.
FINING AND STABILIZATION TREATMENTS APPLIED TO WINES
Spontaneous clarification of wine. Clarification of the wine by centrifugation. Wine fining. Fining of the wine with gelatin. Fining of wine with fish glue. Fining the wine with egg whites. Fining of wine with milk or casein. Wine fining with synthetic polyamides. Wine fining with bentonite.
Wine filtration. Filtering materials used in the wine industry. Filter layers. Membrane filter. The main types of filters and their use in wine-making practice. Cross-flow filtering.
Stabilization treatments applied to wine. Refrigeration of wine. The classic wine refrigeration process. The process through the wine refrigeration contact. Wine treatment with metatartric acid.

Stabilization treatments applied to wine. Pasteurization of wine. Pasteurization processes. Treatment of wine with potassium ferrocyanide. Wine treatment with calcium phytate. Wine electro dialysis and ion exchange treatment.
WINE BOTTLING
Bottling of wines. Containers used for bottling wine. Cork filling materials. Materials used to decorate cylinders. The technology of wine bottling. Technological bottling lines. Sterile bottling.
CLASSIFICATION OF WINES AND BASIC TECHNOLOGIES FOR OBTAINING THE MAIN CATEGORIES AND TYPES OF WINE
Classification of wines.
Basic technologies for obtaining white wines. Technology for the production of white table wines. Technology for producing dry DOC white wines. The technology for the production of half-white, half-sweet and sweet DOC white wines. Technology for the production of aromatic wines.
Basic technologies for obtaining red wines. Technology for the production of red table wines. DOC red wine production technology. Technology for the production of rose wines.

Practical works
Follow-up of the technological process of primary winemaking.
Determination of total phenolic compounds in wines.
Determination of anthocyanin content in grapes and wine.
Determination of total and free SO ₂ from musts and wines.
Fining of wine with bentonite.
Fining of the wine with gelatin.
Wine filtration.
Wine blending.
Phases of wine evolution. Comparative tasting.
Identification of tartaric, lactic and malic acids in wine.
Determination of the ash and alkalinity of the wine.
Determination of iron in wine.
Treatment of wines with potassium ferrocyanide.
Test.

Bibliography

- Cotea, D.V., Zanoaga, V.C., Cotea, V.V., 2009** - *Tratat de Oenochimie*, vol. I, vol. II, Editura Academiei Române, Bucure ti.
- Cotea, V.V., Cotea V.D., 2006** - *Tehnologii de producere a vinurilor*, Editura Academiei Române, Bucure ti.
- Cotea, V.V., Zanoaga, V.C., Cotea V.D., 2010** – *Oenologie. Construc ii, vase si utilaje vinicole*, Editura Academiei Române, Bucure ti.
- Pomohaci, N., Gheorghii , M., Iuora , R., Stoian, V., Cotru, A., Cotea, V.V., 1990**,- *Oenologie*, Editura Didactic i Pedagogic , Bucure t.
- Pomohaci, N., Stoian, V., Gheorghii , M., Sîrghi, C., Cotea, V.V., Namolanu, I., 2000** - *Oenologie. Volumul 1: Prelucrarea strugurilor si producerea vinurilor*. Editura Ceres, Bucure ti.
- Pomohaci, N., Cotea, V.V., Stoian, V., Namolanu, I., Popa, A., Sîrghi, C., Antocea, Arina, 2001**, - *Oenologie. Volumul 2: Îngrijirea, stabilizarea si îmbutelierea vinurilor. Construc ii și echipamente vinicole*. Editura Ceres, Bucure ti.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Course	Oral Exam	50%
Practical works	Evaluation during the semester	30%
	Final test	20%

Contact

Cotea V. Valeriu

Faculty of Horticulture - USAMV Ia i

Aleea Mihail Sadoveanu nr. 3, Ia i, 700490, Romania

Tel: 0040232407519, fax: 0040 232 219175

E-mail: vcotea@uaiasi.ro

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