



Hinc patriam sustinet

Instituto Superior de Agronomia
Universidade Técnica de Lisboa

Course: Derived Products and By-products of Grape and Wine (2nd cycle, 2nd year, 1st semester)

Coordinator: Jorge M. Ricardo da Silva

Other teacher: AP Belchior (EVN), Isabel Spranger (EVN), Sara Canas (EVN), Ilda Caldeira(EVN), Baoshan Sun (EVN); Ana Maria Teixeira (Invited); Isabel Sousa

Course requirement: Composition and Physico-Chemical and Sensory Control of Wines (6 ECTS), Vinification (6 ECTS)

Number and type of teaching weekly hours: 3,5h (3ECTS) 2 hours theory and 1,5 hours practical

Program	Duration	Teachers
I. Presentation Objectives of the course and programe. Short history of the derived products and by-products of grapes and wines. Actual importance	1 Week	Jorge M. Ricardo da Silva
II. Grape Derived Products Juices. Types of juices. Production diagram and equipment. Raisins. Types and production diagram and equipment. Polysaccharides jellification. Process of jellification and agents. Jams. Types of jams. Production diagram and equipment. The case of "uvada". Jellies. Types of jellies. Production diagram and equipment. The case of hypocaloric jellies. Liquors. Types of liquors. Production diagram and equipment. Concentrated must. Economic importance. Production technology. Equipment. Concentrated must rectification. Other grape derived products.	4 Weeks	Jorge M. Ricardo da Silva Isabel Sousa Ilda Caldeira
III. Wine Derived Products Wine brandies. Raw material characteristics (wine). Types of wine brandies. Production diagram. Distillators/Alambics systems. Ageing technology. The cellar. The barrels. Physico-Chemical composition of wood. Botanical and Geographical origine of wood. Barrels production . Maturation control. Vinegars. Types of vinegars. Production technology. Fermentation systems. Vinegars fining. Other Wine derived products	4 Weeks	AP Belchior Sara Canas Ilda Caldeira Ana Maria Teixeira Jorge M. Ricardo da Silva
IV. By-products valorisation Grape Stems. Husks; The pomace brandy. Grape seeds. Lees.	3 Weeks	Jorge M. Ricardo da Silva AP Belchior Isabel Spranger Baoshan Sun

Tartar "Vinhaços" and "Flegmaças"		
V. Biological, Nutraceutical and Pharmacological Aspects of Vine Products The importance of nutraceutical and pharmacological products The bioactive constituents Biological and pharmacological activities Commercial products	2 Weeks	Jorge M Ricardo da Silva Isabel Spranger Baoshan Sun Sara Canas
Practical Courses (Program) A- Elaboration of a grape liquor B- Physico-Chemical analysis of a brandy: Alcohol content, colour intensity, Total polyphenols. Sensory analysis of brandies. C- Elaboration of a wine vinegar and sensory analysis of vinegars D- Physico-Chemical analysis of wine vinegar : Titrable acidity, pH, Residual alcohol content, E- Distillation of husks in order to produce a pomace brandy F- Evaluation of the Total Polyphenols in grape seeds and stems extracts	1,5 hours per week	Jorge M. Ricardo da Silva Ana Maria Teixeira