

Advanced Viticulture

Course: Viticulture and Oenology

Year: 2

Scientific areas: Agriculture **Duration:** 1st semester

Credits: 6.0 ECTS **Type:** Compulsory

Language: Portuguese/English

Prerequisites: Viticulture

Lecturer(s):

Carlos Lopes (ISA), Antero Martins (ISA), Pedro Aguiar Pinto (ISA), Elsa Gonçalves (ISA), Sara Monteiro (ISA), Sofia Pereira (ISA), Tiago Santos (ITQB), Ricardo Braga (ESAE), Eiras Dias (INRB).

Web site: <http://www.isa.utl.pt/home/node/2590>

1. Teaching Typology/Contact Hours:

Lectures: 70.0

Practicals: 28.0

Total: 98.0

2. Objectives:

To complete the background on Viticulture by providing a deeper understanding on specialized areas of viticulture like grapevine breeding, vineyard mechanization, crop development and estimation, precision viticulture, effects of climate changes on viticulture and biotechnology of grapevine.

3. Programme:

1. Grapevine breeding
2. Vineyard mechanization
3. Implications of climate change for viticulture and wine production
4. Crop development and estimation.
5. Precision Viticulture
6. Grapevine Biotechnology

4. Bibliography:

CLINGELEFFER, P., DUNN, G.; KRSTIC, M.; MARTIN, S. 2001 Crop Development, Crop Estimation and Crop Control to Secure Quality and Production of Major Wine Grape Varieties: A National Approach. Project final report, Grape And Wine Research & Development Corporation, Australia, 159 pp.

COOMBE, B.G., DRY, P.R. (2004). *Viticulture. Vol. 1 – Resources*. 2nd edition, Winetitles, Adelaide, Austrália, chapter 1 & 2.

CUNHA, M. (2002). Previsão de colheitas em viticultura. Integração de modelos aeropolinicos e bioclimáticos. *Dissertação de doutoramento*, Faculdade de Ciências da Universidade do Porto, Porto, 120 pp.

FERREIRA R., MONTEIRO S., FREITAS R., SANTOS C., BORGES A., CHEN Z., BATISTA L., DUARTE J., TEIXEIRA, A. (2007). The role of plant defence proteins in fungal pathogenesis. *Molecular Plant Pathology*. 8, 667-700.

- FERREIRA RB, MONTEIRO S, PIÇARRA-PEREIRA MA, TEIXEIRA A (2004). Engineering grapevine for increased resistance to fungal pathogens without compromising wine stability. *Trends in Biotechnology*. 22, 168-173.
- FURNESS, G.O.; NICHOLAS, P.R.; MAGAREY, P.A.; MANKTELOW, D.; MABER, J. (2003). Vineyard Sprayers. In: *Diseases and Pests*, Nicholas, P.; Magarey, P.; Wachtel, M (ed.), Winetitles, Adelaide, Austrália, 106 pp.
- HOWELL, S. (2001). Sustainable grape productivity and the growth-yield relationship: a review. *Am. J. Enol. Vitic.* 52(3):165-174.
- IFV, 2007. Machines à vendanger. Bonnes pratiques de récolte. Institut Français de la Vigne et du Vin, Paris, Itinéraires, 15, 23 pp.
- IFV, (2007). Pulvérisation en viticulture durable. Choix du matériel et réglages. Institut Français de la Vigne et du Vin, Paris, Itinéraires, 16, 27 pp.
- INTRIERI, C.; SILVESTRONI, O.; PONI, S., FILIPPETTI, I.; COLUCCI, E.; LIA, G. 1998. Meccanizzazione integrale in viticoltura. *Terra e Vita*, 11, 1-62.
- JONES, GV; White, MA; Cooper, OR; Storchmann, K (2005). Climate change and global wine quality. *Climatic Change* 73: 319-343.
- LOPES, C.; MELÍCIAS, J.; ALEIXO, A.; LAUREANO, O.; CASTRO, R. (2000). Conséquences de la taille mécanique en haie fixe sur la vigueur, rendement et qualité du cépage 'Cabernet Sauvignon'. *Acta Horticulturae*, 526: 261-268.
- LOPES, C.M.A. & PINTO, P.A. (2005). Easy and accurate estimation of grapevine leaf area with simple mathematical models. *Vitis*. 44 (2):55-61.
- MARTINS, A.; CARNEIRO, L.; GONÇALVES, E. (2006). Metodologia de análise e conservação da variabilidade intravarietal: o exemplo da cv. Aragonês. XXIX Congresso do OIV, Logrono.
- MARTINS, A. (1993). Heritabilidade e ganho de selecção em populações de propagação vegetativa e de reprodução sexuada. Policopiado, AEISA, Lisboa.
- MARTINS, A. (2007) - Variabilidade genética intravarietal das castas. In J. Bohm (ed.), Portugal vitícola, o grande livro das castas. Chaves Ferreira Publ., Lisboa.
- MOREIRA, J.F. (2005). Material de aplicação de produtos fitofarmacêuticos. ISAPress, Tapada da Ajuda, Lisboa, 56 pp.
- O.I.V. (1990) Programme type pour la réalisation de la sélection clonale de la vigne. *Bull. OIV* Set/Out:715-716.
- PONI, S. (2006). Mechanization and Terroir: Are they compatible? *Practical Winery and Vineyard*, May/June: 44-63.
- POSSINGHAM, J.V., (1994). New concepts in pruning grapevines. *Hort. Rev.* 16, 24-30.
- PROFIT, T. BRAMLEY, R, LAMB, D, WINTER, E. (2006). Precision Viticulture. A new era in vineyard management and wine production. Winetitles, Ashford, South Australia, 90 pp.
- SHULTZ, HR (2000). Climate change and viticulture: A European perspective on climatology, carbon dioxide and UV-B effects. *Aust. J. Grape and Wine Research*, 6 (1):2-12.

5. Assessment:

Evaluation by a written report based on a literature review of a given topic (1/3) and by a final examination (2/3).

6. Estimated workload:

168.0 hours