HONEYBEE HEALTH

Study Programme: MIMV **Curricular Year: 4º** **Semester: 7th** **Optative** **Credits: 2.5 ECTS**

Lecturer(s): Isabel Pereira da Fonseca (CCP and R), Berta S. Braz, Yolanda Vaz, José Silva Meireles, Maria José Valério, Andreia Grilo, Mathieu Pascoal, Dinis Silva, Luís Calaim.

1. Contact hours: **Lectures – Theoretical – 20; Practical – 8. Total – 28**

2. Objectives:
The study of bee health will enable the student to develop an interest in this field of knowledge and to acquire the ability to recognise the main health threats to the productivity of beekeeping in Portugal; to recognise the aetiology, epidemiology, lesions and signs of infectious and parasitic diseases of bees; to be able to describe and implement control measures; to know how to take samples for laboratory diagnosis and how to evaluate the information contained in the apiary data sheet in order to guide the diagnosis based on the anamnesis; to know the legislative framework, the national bee health programmes and the bodies involved; to recognise the main food safety problems related to bee products.

3. Programme:
Theoretical: Bee biology, anatomy, physiology, life cycle, behaviour and feeding. Beekeeping as a commercial activity (Portugal). Threats to beekeeping. Beekeeping management and legislation: Installation, increase of colonies, inspection of hives, food and waxes. Cleaning and disinfection of equipment. Disease prevention. Legislation. Standards for sending samples to the laboratory. Methods of analysis and identification of aetiological agents. Parasitic diseases. Bacterial diseases. Fungal diseases. Viral diseases. Treatment and prophylaxis. Case study. Loss of Colonies Syndrome: International Review and Associated Factors. The role of the FNAP. Honey as food: labelling, quality control and consumption in Portugal. Residues in honey: Origin of xenobiotic residues and their types. Risk to bees and toxicity to public health. Legal requirements regarding residues, monitoring and control of xenobiotics in honey. Logistics of an apiary. Practical: Dissection of bees. Samples collection for parasitological, bacteriological, fungal and virus's diagnosis. Observation of pathogens and movies watching. Disease surveillance: examination of a hive.

4. Bibliography:
Power Point presentations of the theoretical subjects (available in intranet) and articles.
Almeida, C.M.V.B. (2010). *Detecção de contaminantes no mel*. Dissertação de Mestrado em Segurança Alimentar. Faculdade de Medicina Veterinária, Universidade Técnica de Lisboa. http://www.repository.utl.pt/bitstream/10400.5/2167/1/1%20%20Disserta%C3%A7%C3%A3o%20MSA_MEL.pdf
Godinho, J.S.P. (2012). *Curso prático de apicultura: Introdução.* Lisboa. Posto Apícola. Unidade de Investigação de Silvicultura e Produtos Florestais.
Programa Apícola Nacional (http://www.gppaa.min-agricultura.pt/MA/apicultura/)
Silva, M.J.V. (2011). *Primeiro diagnóstico del Aethina tumida en la Union Europeia*. Lisboa, Laboratório Nacional de Investigação Veterinária.
Silva, M.J.V. (2011). *Principais doenças diagnosticadas no efectivo apícola de 2008 a 2010*. Lisboa, Laboratório Nacional de Investigação Veterinária.
Silva, M.J.V. (2011). *Senotainiose or apimiase*. Lisboa, Laboratório Nacional de Investigação Veterinária.

5. Assessment:
The assessment of the discipline will be accomplished through a written examination (maximum score 18/20) including short answer, true and false, missing words and open-ended questions. The continuous assessment in practical component will allow the student to benefit an extra score of 2/20.