UNIVERSIDADE DE LISBOA

Faculdade de Medicina Veterinária

HONEYBEE HEALTH

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

Lecturer(s): Isabel Pereira da Fonseca (CCP e R), Berta S. Braz, José Silva Meireles, Adriana Belas, Joana Godinho (INIAV), Maria José Valério (INIAV), Mathieu Pascoal.

1. Contact hours: **Lectures – 20 Practicals – 8 Total – 28**

2. Objectives:
The study of honeybee health will enable the student to develop the interest in this area of knowledge, acquiring skills to recognize the major health threats to productivity of the apiary in Portugal; to recognize the etiology, epidemiology, lesions and signs of infectious and parasitic diseases of the bee; to be able to describe and to implement control measures; to learn how to collect samples for laboratory diagnosis and to know how to evaluate the information contained in apiary datasheet to direct the diagnosis based on anamnesis; to learn about the legislative framework, national apiculture health programs and entities involved; to recognize the main problems of food safety in relation to bee products.

3. Programme:
Theoretical: Bee biology, anatomy, physiology, life cycle, behavior and feeding. Beekeeping as a commercial activity (Portugal). Threats to beekeeping. Apiary management and legislation: Installation, multiplication of colonies, reviewing hives, food and waxes. Cleaning and disinfection of equipment. Prophylaxis of diseases. Legislation. Standards for sending samples to the laboratory. Analytical methods and identification of etiological agents. Parasitic diseases. Bacterial diseases. Fungal diseases. Viral diseases. Treatment and prophylaxis. Case study. Loss of Colonies syndrome: international overview and associated factors. The role of FNAP. Honey as food: labeling, quality control and consumption in Portugal. Residues in honey: Origin of residues of xenobiotics and their types. Risk for bees and for public health toxicity. Legal requirements relating to residues, monitoring and control of xenobiotics in honey. Logistics of an apiary. Pratical: Dissection of bees. Collection of samples for parasitological, bacteriological, fungal and viruses diagnosis. Observation of pathogens and movies watching. Disease surveillance: reviewing a hive sampling.

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.