

## **MICROBIOLOGY II**

**Study Programme: MIMV    Curricular Year: 2<sup>nd</sup>    Semester: 4<sup>th</sup>    Compulsory    Credits: 3.0 ECTS**

**Lecturer(s):** Luis Tavares (CCP; R), Solange Gil, Eva Cunha

### **1. Contact hours:**

**Lectures 17    Practicals 14    Total 28**

### **2. Objectives:**

Students must understand and discriminate aspects of viral biology and pathogenicity, in order to establish the adequate control strategies, recognize the importance of virus in the different morbid processes. Students must develop competencies of manipulating laboratory instruments and substrates or samples bearing viruses, be able to plan and perform virology analysis, have the basic knowledge to critically read scientific articles and write technical reports.

### **3. Programme:**

Theoretical: Introduction to virology. Morphological and structural characteristics of viruses. Viral taxonomy: virus with medical and veterinary interest Biological cycle of viral infection and replication. Genetics of animal viruses. Replication strategies of viral genome. Pathogenesis of viral infections. Cytopathic effect. cell transformation and oncogenesis. Virulence determinants. Host anti-viral defence. Possibilities of antiviral medical and therapeutic intervention. Retrovirus, Influenza and herpesvirus: importance, characteristics and pathogenesis. Bacteriophages: relevance and main characteristics. Non-conventional infectious agents: Prions.

Practical – Viral isolation and propagation systems; cell culture: primary cell culture, cell lines, observation techniques, washing steps and trypsinisation. Viral cytopathic effect; lysis plates, titration of a lytic virus. Viral propagation in eggs: inoculation in the allantoic cavity. Titration of a haemagglutinating virus; rapid and microplate agglutination.

### **4. Bibliography:**

Prescott's Microbiology. Joanne Willey, Linda Sherwood, Chris Woolverton. 11<sup>a</sup> edição 2019 (ISBN-978-1-260-21188-7).

Fenner's Veterinary Virology (5d Edition). N. James Maclachlan, Edward J Dubovi (Editor), Elsevier 2017. (ISBN - ISBN: 978-0-12-800946-8)

Microbiologia (Volume 3). Coord: Wanda F. Canas Ferreira e João Carlos F. De Sousa Lidel 2002.

### **5. Assessment:**

Theoretical – Written exam. Practical – Continuous evaluation of practical work and final written exam.