

MICROBIOLOGY II

Study Programme: MIMV Curricular Year: 2nd Semester: 4th Compulsory Credits: 3.0 ECTS

Lecturer(s): Luis Tavares (CCP; R), Ana Duarte, Solange Gil

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:

Wiley, J., Sherwood, L. & Woolverton, C. (2011). *Prescott's Microbiology*. 8th Edition, McGraw-Hill.
Murphy, F.A, Gibbs, E., Horzinek, M. & Studdert, M. (2000). *Veterinary Virology* (3rd Edition). Academic Press.
Sousa, J.C.F., Ferreira, W.C. & Nelson, L., (2010). *Microbiologia* (Volume 3). Lidel.

5. Assessment:

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