



DENGUE FEVER, YELLOW FEVER AND OTHER ARBOVIRUSES TRANSMITTED BY MOSQUITOES

CU characterization:

CU name:

Dengue fever, yellow fever and other arboviruses transmitted by mosquitoes

Scientific area acronym:

EM

Duration:

Semestral

Working hours:

58

Contact hours:

30

ECTS:

2

Observations:

Optional CU

Teacher in charge and respective teaching load in the CU:

Carla Sousa – 13.5 hours

Other teachers and respective teaching load in the CU:

Teresa Novo – 13.0 hours

Paulo Almeida – 9.5 hours

Ricardo Parreira – 13.5 hours

Jorge Seixas – 1.5 hours

Intended learning outcomes (knowledge, skills and competences to be developed by the students):

At the end of this module, students should be able to contribute to research or to plan interventions to control this group of diseases. Specifically, they should be able to:

1. Appraise epidemiologic data on arboviral diseases (geographic distribution, reservoirs and vectors of the major arboviruses, including: Chikungunya, Dengue, Japanese Encephalitis, West Nile virus and Rift Valley Fever arboviruses).
2. Assess the importance of environmental changes on mosquito-vector populations.
3. Explain the risks of introducing exotic species of mosquitos.



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Intended learning outcomes (knowledge, skills and competences to be developed by the students): (continuation)

4. Appraise the applicability of different vector collection methods and diagnostic techniques in different epidemiological, logistic and organizational contexts.
5. Design and discuss surveillance and control strategies of this group of diseases.

Syllabus:

- I. Arboviruses and arboviral diseases: definitions and types of disease transmission; major arboviral infections and their epidemiology.
- II. Main arboviruses: classification, structure, genomic organization and replicative cycle.
- III. Case study: Madeira. Presentation of raw data necessary for the elaboration of the written assignment.
- IV. Mosquito vectors collection methods and specimens (immature and adults) morphological identification.
- V. Entomological parameters important for the epidemiology of an arboviral infection. Estimation of the Human Blood Index based on an ELISA (Enzyme Linked immunosorbent Assay).
- VI. Arboviral diseases: a history of invasion and (re)emergence.
- VII. Clinical aspects of arboviral diseases.
- VIII. Laboratorial diagnostic of the major arboviral infections.
- IX. Detection of *Alphavirus* by RT-PCR.

Teaching methodologies (including assessment):

Course will be composed by 4 theoretical lectures; 4 theoretical-practical classes where the demonstrative and active methods will be applied and by 4 practical classes that will take place in the laboratory and in the field where active and interrogative methods will be applied. There will also be tutorial sessions to support self-study and preparation of written assignment.

Student's evaluation will be based on two components. At the end of the UC there will be a seminar with a presentation by the professors and discussion between professors and students of the written work that serves as an evaluative element. During this seminar, feedback regarding the work carried will be given to the students through a collective discussion on the topics addressed.

The evaluation of the students will be made based on two components:

- On an individual written paper, with about 2000 ± 200 words (except graphics and bibliography), to be carried out from an actual case study, based on data provided by the responsible teachers.
- The performance of students in practical classes assessed through small questionnaires.



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Teaching methodologies (including assessment): (continuation)

- Any of the elements will be subject to a rating between 0 and 20 values. Students who score less than 10 in written work will be disapproved. The final classification will be obtained from the formula:

$(\text{written assignment}) \times 0.65 + (\text{practical classes}) \times 0.35$

- For the purpose of improvement of grade, or in case of failure, students will have to carry out a written exam.
- The evaluation of the UC and its teaching staff will be carried out through an anonymous questionnaire of student's satisfaction.

References for consultation / mandatory existence:

- Almeida APG *et al.* (2005). Bioecology and vectorial capacity of *Aedes albopictus* (Diptera: Culicidae) in Macao, China, in relation to dengue virus transmission. *Journal of Medical Entomology* 42: 419-428.
- Gubler DJ, Kuno G (eds) (1997). *Dengue and Dengue Hemorrhagic Fever*. CAB International. Wallingford, UK.
- Gordon C, Zumbala A (eds) (2008). *Manson's Tropical Diseases: Expert Consult Basic*; Saunders Ltd. Edinburgh. UK.
- Strauss JH, Strauss EG (2008). *Basic Virology*. Blackwell Publishing. Malden. MA.
- Wernsdorfer WH (ed) (1988). *Malaria. Principles and practice of malariology*. Churchill Livingstone Inc. London. UK.
- Powerpoint presentations, supporting texts and specific bibliography for each class.