Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Natural Sciences

2BI010 Zoonotisk ekologi och epidemiologi, 15 högskolepoäng
Zoonotic Ecology and Epidemiology, 15 credits

Main field of study
Biology, Biomedical Science

Subject Group
Biology

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by the Board of the School of Natural Sciences 2010-05-25

The course syllabus is valid from spring semester 2011

Prerequisites
Biology and Biomedical Science 60 credits, including Ecology 15 credits, Biochemistry 15 credits, Cellbiology 7,5 credits and Microbiology 7,5 credits, or equivalent.

Expected learning outcomes

After completing the course, the student should be able to:

- give an account on central definition and fundamental empirical patterns, theories and methods in infection ecology
- describe the lifecycles of a number of viruses, bacteria and parasites of concern for human and animal health
- describe the role of diseases in wild and domestic animal populations and in humans
- briefly describe fundamental pathogenicity of viral and bacterial pathogens
- give an account on models used to describe epidemiology and virulence
- discuss how population structures of animals and pathogens affect host specificity and epidemiology of diseases
- give an account for basic techniques for detection of and characterization of pathogenic microorganisms
- use data and statistical test to evaluate results and scientific hypotheses
- give an account for how scientific publications are constructed, and critically review the contents of scientific works

Content

The course contains
Module 1 Theory 9 credits

Fundamental definitions in infection ecology
Descriptions of disease-causing viruses, bacteria, fungi and parasites
Global and regional patterns in diseases
A historical perspective on the emergence of diseases during human civilization
Adaptations and life-histories in microorganisms, and their effect on evolution, epidemiology and virulence of diseases
The effect of host ecology and population structure on disease transmission and virulence
Zoonotic infections in human and veterinary medicine
Detection and characterization of zoonotic infections
Models and theories in infection biology

Module 2 Literary essay 2 credits

Literature searches and oral and written presentations.

Module 3 Projects and practicals 4 credits

Laboratory practical aimed at detection and characterization of pathogens

Individual projects, including oral and written presentations

Type of Instruction

Teaching includes lectures, seminars, excursions and laboratory exercises.

Seminars, excursions, laboratory exercises and practical assignments are compulsory.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
Theory (subcourse 1) will usually be assessed in one or more written examinations. A first reexamination should be offered within 6 semester weeks. Number of examinations is limited to 5.The grades are Fail (U), Pass (G) or Pass with Distinction (VG). Learning outcomes of subcourse 2 and 3 will be assessed by laboratory assignments, and by seminar presentations and written reports. The grades in subcourse 2 and 3 are Fail (U) or Pass (G).

The grades of the course are Fail (U), Pass (G) or Pass with Distinction (VG). For a G, all learning outcomes have to be achieved.

Course Evaluation

Upon completion, the course will be evaluated by filling out the evaluation form. The result of the individual evaluations are turned into a summary report that will be kept in the department administrational archives. The outcome of the evaluation of the previous year, as well as possible measures taken, will be discussed with the head of department, as well as with incoming students at the start of the next course.

Required Reading and Additional Study Material

Wobeser, G.A. 2006. Essentials of Disease in Wild Animals. Blackwell Publishing. ISBN-10: 0-8138-0589-9, ISBN-13: 978-0-8138-0589-4

Scientific articles and field/laboratory instructions will be handed out during the course.

Colling, S. K. & Ray, C. 2006. Disease ecology – community structure and pathogen dynamics. Oxford University Press Inc.: New York. ISBN 0-19-856707-3

Källenius, G. & Svensson, S. B. 2001. Zoonoser. Studentlitteratur: Lund. ISBN 9789144012100