Linnæus University

Jnr: 2013/2709-3.1.2

Course syllabus

Faculty of Health and Life Sciences
Department of Chemistry and Biomedical Sciences

1BI008 Klinisk mikrobiologi, 7,5 högskolepoäng
Clinical Microbiology, 7.5 credits

Main field of study
Biology, Biomedical Science

Subject Group
Biology

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved 2009-06-09
Revised 2013-11-20 by Faculty of Health and Life Sciences.
The course syllabus is valid from autumn semester 2013

Prerequisites
Biochemistry 15 credits or equivalent.

Objectives

Upon completing the course the student should be able to:

• Describe the structure of microorganisms and viruses and describe bacterial metabolism in general terms
• Give an account of the growth of bacteria and the reproduction of viruses
• Give an account of common sterilization and disinfection methods and sterile technique
• Describe the mechanisms for bacterial gene transfer and give an account of the emergence and consequences of mutations
• Give an account of gene regulation processes
• Describe in a general way genetic engineering methods used to study genomes and genetically modify microorganisms
• Give examples of how antimicrobial substances work and give an account of microbial resistance mechanisms
• Give a general account of the course of an infection, human defense mechanisms and microbial virulence factors

Content

The composition and structure of microorganisms. General virology: structure, composition, reproduction and quantification. Parasitology. The metabolism and growth of microorganisms. Sterilization and disinfection. Genetic engineering of bacteria. Gene regulation. Genetic engineering. Antibiotics and antibiotic resistance. Microbial virulence factors. Classic, immunochemical and molecular biology methods in clinical microbiology

diagnostics. Aseptic and culture techniques, microscope slide preparation, Gram staining, microscopy, antibiotic susceptibility testing.

Type of Instruction

The course includes lectures, group exercises, seminars and laboratory exercises. Participation in group exercises, seminars and laboratory exercises as well as certain specified lectures is mandatory.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
Examination is usually conducted through a written exam and a written account of laboratory work. The written examination is graded on a scale of Fail, Pass or Pass with Distinction.
The criteria for a passing grade are listed in Objectives (see above).

An opportunity to retake the exam is offered within six weeks in term time. The number of examination opportunities is limited to five.

Course Evaluation

A written course evaluation is conducted at the end of the course. The results of the evaluation are summarized in a report that is archived by the department's administration. The results of the evaluation, and any measures taken, are discussed with the programme director and presented to the students on the next scheduled occasion.

Required Reading and Additional Study Material

Required reading

Bauman, Robert W. *Microbiology with Diseases by Taxonomy.* Benjamin Cummings. (Latest edition)
or
Bauman, Robert W. *Microbiology with Diseases by Body System.* Benjamin Cummings. (Latest edition)

Blücher, Anna. (2011). *Mikrobiologisk arbetsmetodik.* Linnéuniversitetet, Kalmar.

Marklund, Britt-Inger. *Laborationskompendium, Klinisk Mikrobiologi.* Linnéuniversitetet, Kalmar. (Latest edition)