Linnæus University

Dnr: 2022/2669-3.1.2.2.

Course syllabus

Faculty of Health and Life Sciences

Department of Chemistry and Biomedical Sciences

1BI008 Klinisk mikrobiologi, 7,5 högskolepoäng
1BI008 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 2022-06-27 by Faculty of Health and Life Sciences.
The course syllabus is valid from spring semester 2023

Prerequisites
1KE014 Pharmaceutical Biochemistry, 15 credits, or the equivalent.

Objectives

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

- describe the structure of microorganisms and viruses and provide an overview of bacterial metabolism
- explain bacterial growth and virus replication
- present common sterilisation and disinfection methods, as well as sterile techniques
- describe bacterial gene transfer mechanisms and explain the occurrence and consequences of mutations
- present gene regulatory processes
- provide an overview of genetic techniques used to study genomes and genetically modify microorganisms
- give examples of mechanisms of action for antimicrobial agents and explain microbial resistance mechanisms
- explain in general terms an infection process, human defense mechanisms, and microbial virulence factors.

Content
The course includes the following components:

- structure and composition of microorganisms
- general virology: structure, composition, reproduction, and quantification
- parasitology and mycology
- metabolism and growth of microorganisms
- sterilisation and disinfection
- bacterial genetics
- gene regulation
- genetic engineering
- antibiotics and antibiotic resistance
- microbial virulence factors
- classical, immunochemical, and genetic methods in clinical microbiological diagnostics
- sterile and cultivation techniques and preparation of specimens
- gram staining, microscopy, and antibiotic resistance determination.

Type of Instruction
Instruction is delivered in the form of lectures, group exercises, a seminar, and laboratory work. Five course lab sessions are mandatory.

Examination
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The course is examined through a written examination of 6 credits (Fail–Pass with Distinction), an oral and a written presentation of a seminar assignment, and written lab reports. The seminar assignment and the laboratory work are together worth a total of 1.5 credits (Fail–Pass). In order to receive the grade of Pass for the course, the student must have passed all examination elements. In order to receive the grade of Pass with Distinction, the student must have been awarded this grade for the written examination.

Resit examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to adapt the exam or to let the student conduct the exam in an alternative way.

Course Evaluation
During or shortly after the course, a course evaluation should be conducted. The result and analysis of the course evaluation should be promptly communicated to the students who have taken the course. Students who are taking the course when it is offered the next time should be informed of the result at the course introduction. The course evaluation is anonymous.

Required Reading and Additional Study Material
Required reading
Bauman, Robert W. *Microbiology with Diseases by Taxonomy.* Benjamin Cummings. (The latest edition). Approx. 600 pp out of 900 pp.
or
Bauman, Robert W. *Microbiology with Diseases by Body System.* Benjamin Cummings. (The latest edition). Approx. 600 pp out of 900 pp.

Blücher, Anna. (2011). *Mikrobiologisk arbetsmetodik.* Linnéuniversitetet, Kalmar. Provided on MyMoodle when the course begins.

Marklund, Britt-Inger. *Laborationskompendium, Klinisk Mikrobiologi.* Linnéuniversitetet, Kalmar. (The latest edition). Provided on MyMoodle when the course begins.