



Faculty of Health, Science and Technology
Clinical Medicine

Syllabus

Medical microbiology and immunology

Course Code:	MDGMI1
Course Title:	Medical microbiology and immunology <i>Medicinsk mikrobiologi och immunologi</i>
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has only upper-secondary level entry requirements (G1N)

Major Field of Study:

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2020-08-28, and is valid from the Spring semester 2021 at Karlstad University.

Prerequisites

General admission requirements plus Mathematics 2a/2b/2c (B) and Science Studies 2 (B), or equivalent

Learning Outcomes

The aim of the course is for students to acquire basic knowledge of medical microbiology and the structure and function of the immune system.

Upon completion of the course, students should be able to:

- give an account of basic eukaryotic, bacterial, and viral structures and give examples of processes in which bacteria and viruses cause infection in humans,
- describe and demonstrate an understanding of the importance of the normal microbiome and the difference between normal and pathogenic microbiomes.
- describe various routes of infection and interventions to stop transmission.
- describe mechanisms of action for different types of pharmaceuticals used to treat

infectious diseases.

- describe the structure and function of lymphoid organs.
- describe the role of immunocompetent cells in innate and adaptive immune responses.
- describe how cellular and humoral immune responses act to create acute phase reaction, inflammation, and fever, and how these reactions are regulated.
- give an account of the general principles for signals between immune cells.
- give an account of how immune memory is created and sustained over time.
- give an account of how the specificity of the immune system is achieved and explain how and why developing tolerance is important.
- describe how vaccination and preventive medicine are used to induce immunity.

Content

Instruction is in the form of lectures and seminars.

The course covers the following:

- Basic bacteriology and virology.
- The mechanisms of action for antibiotics, antibiotic resistance, and pathogen response.
- The theory of laboratory work on micro-organisms.
- The structure, cellular organisation, and communication of the immune system.
- The profile, differentiation, properties, and function of effector cells in the immune system.
- The complement system and the structure and function of antibodies.
- Principles for vaccination.

Reading List

See separate document.

Examination

Assessment is based on an individual written exam.

If students have a decision from Karlstad University entitling them to special pedagogical support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades

One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional information

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.