



DEPARTMENT OF MEDICINE, SOLNA

K2F3139, Basic Immunology, 3 credits (hec)

Grundläggande immunologi, 3 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by the The Committee for Doctoral Education on 2023-11-27, and was last revised on 2025-04-03. The revised course syllabus is valid from autumn semester 2025.

Responsible department

Department of Medicine, Solna, Faculty of Medicine

Prerequisite courses, or equivalent

Basic understanding of cell and molecular biology. As an example - you should roughly remember what 'translation', 'G1 phase', 'splicing', or 'endocytosis' all are off the top of your head (without necessity for molecular details).

No prior knowledge in immunology is required, as we will go through the basics. This is infact a course about Basic Immunology. However, a clear interest in immunology is important to appreciate the course. The course is also targeting those working in the immunology field and wishing to learn more about the immune system and their components in health and disease.

Purpose & Intended learning outcomes

Purpose

The purpose of this course is to give doctoral students the possibility to acquire a solid knowledge and understanding of fundamental principles in immunology. All other courses in the doctoral education program Aii (Allergy, immunology and inflammation) assume that students have taken the Basic Immunology course, or otherwise have attained the same level of previous knowledge and understanding.

Intended learning outcomes

- To describe basic principles of innate and adaptive immunity and how different components of

the immune system cooperate

- To describe how altered functions of the immune system components can lead to a variety of diseases
- To reflect on how your newly gained knowledge of the immune system may influence your current work, or how it inspired you to address new questions.

Course content

This is a full-time course, which consists of 2 parts. In part 1 we discuss basic immunological concepts underlying innate and adaptive immune responses. In part 2 we revisit and discuss these concepts in the context of disease/clinical settings.

More specifically, in part 1 we will discuss the development and function of key cell types mediating immune responses, pathogen recognition by cells of the innate immune system, generation of antigen receptor repertoires, principles of self/non-self discrimination and immunological tolerance, and mechanisms of humoral and cellular immune responses. In part 2, this knowledge will be applied to more clinical contexts such as defense against bacterial and viral infections, Autoimmune Diseases, Transplantation, Allergy and Tumor Immunology.

Forms of teaching and learning

The course consists of lectures and seminars arranged during the morning period, five days per week. In the afternoon, students are assigned for reading to prepare for the next day's topics as well as their assigned group project work (including reading, peer discussions and preparing the assignment). We will conclude most days, or otherwise start the next day, with a group discussion session during which the students have the possibility to ask questions regarding the topics just presented.

The course literature will be available on the course platform in advance of the course start and will be the basis for active discussion during the lectures. We will run exercises and immunological quizzes connected to the different parts of the course, so that the student will be able to digest the relatively big material.

On the last day of the course the project work will be presented orally.

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

The students will be graded as Pass or Fail.

Compulsory components & forms of assessment

Compulsory components

Lecture attendance and submission of all course assignments is compulsory.

Failing to attend the course for more than one day or failing to participate in one of the assignments will result in failure of the whole course.

Forms of assessment

In order to pass the course, the students are required to:

- 1) attend at least 95% of all scheduled activities - a single missed day of the course can be tolerated, but the student will be asked to work on additional individual assignment based on the topic(s) of that day.
- 2) actively participate in lectures and group activities, and
- 3) submit all assignments at a sufficient quality level.

Course literature

Recommended literature:

Abbul K. Abbas, Andrrew H. Lichtman and Shiv Pillai: Basic Immunology – Functions and Disorders of the Immune System. Latest Edition (6th - 7th); Elsevier

Lecture handouts uploaded to the course website.

Selected Papers to each project work assignment.