



Course syllabus

Faculty of Health and Life Sciences

Department of Chemistry and Biomedical Sciences

1BK015 Klinisk immunologi, 7,5 högskolepoäng

1BK015 Clinical Immunology, 7.5 credits

Main field of study

Biomedical Science, Pharmacy

Subject Group

Medicine

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2010-01-26

Revised 2016-09-02 by Faculty of Health and Life Sciences.

The course syllabus is valid from autumn semester 2016

Prerequisites

The Cell I, 7.5 credits, and Biochemistry, 7.5 credits, or the equivalent, or a degree of bachelor of science in pharmacy or the equivalent.

Objectives

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

- use immunological terminology
- describe the structure and function of the human immune system at the molecular, cellular, organ, and organism levels
- discuss the role of the immune system in various immune-related conditions, such as hypersensitivity, autoimmunity, and immunodeficiency, as well as immunity to microorganisms
- discuss the role of the immune system in different therapeutic situations, including vaccination and transplantation
- explain leukemias, multiple myeloma, and lymphomas, and their treatment options
- outline the use of antibodies and other immune components as drugs – today and in the future
- explain the principles of vaccination and immunity, and demonstrate knowledge

- of present and future vaccines
- present the hypersensitivity reactions underlying various autoimmune diseases and their drug treatment
- design and conduct experiments using immunological and immunochemical techniques such as enzyme-linked immunosorbent assay (ELISA) and interpret the experimental results
- present a research article in writing.

Content

- Overview of the human immune system.
- Structure and function of the cellular and molecular components of the immune system.
- Diversity and production of antibodies, as well as antigen-antibody reactions.
- Antibodies as drugs – production, reactions, and use in immunological techniques such as ELISA.
- T-cell development, tolerance development, and diversity of T-cell receptors.
- Structure, function, and genetics of MHC proteins.
- Structure and function of cytokines.
- Humoral and cellular immunity – components involved, including the complement system, and mechanisms, including regulatory mechanisms.
- Immune responses to infections caused by viruses, bacteria, protozoa, fungi, ectoparasites, and worms.
- Transplantation immunology and pharmacotherapy for rejection reactions.
- Immunodeficiency disorders.
- Leukemias, multiple myeloma, and Hodgkin's and non-Hodgkin's lymphomas and their treatment.
- Autoimmune diseases and their pharmacotherapy.
- Antibodies and other immune components as drugs – today and in the future.
- Current and future vaccines.
- Hypersensitivity reactions types I-IV.
- Literature assignment.

Type of Instruction

Instruction is delivered in the form of lectures, seminars, laboratory work, quizzes, and group exercises. Laboratory work and seminars are mandatory.

Examination

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

The theoretical content of the course is examined through an individual written examination at the end of the course.

In order to receive the grade of Pass for the course as a whole, the student must have passed the written examination and the written presentation of the literature assignment, and have completed the laboratory work and passed the written laboratory report. The grading criteria for the grade of Pass are based on the course objectives (see above).

A first resit examination is offered within six academic weeks.

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

Abbas, A.K., Lichtman, A.H. & Pillai, S. *Cellular and molecular immunology*. Saunders Elsevier, the latest edition

Nilsson Ekdahl, K. and Sandholm, K. *Laborationskompendium - Klinisk immunologi*, the latest edition.

Research articles

Wilson, K & Walker, J. *Principles and Techniques of Biochemistry and Molecular Biology*. Cambridge Univ. Press, N.Y., the latest edition.

FASS (online) Läkemedelsindustrins branschförening (LIF), the latest edition.

Rang, H.P., Dale, M.M., Ritter, J.M. & Moore, P.K. *Pharmacology*. Churchill Livingstone, the latest edition.

Walker, R. & Whittlesea, C. *Clinical Pharmacy and Therapeutics*. Churchill Livingstone, the latest edition.

Läkemedelsboken, Läkemedelsverket, the latest edition.