



**Karolinska  
Institutet**

Course syllabus for

## **The Healthy Human 3, 16.5 credits**

Den friska människan 3, 16.5 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:

Autumn2008 , Autumn2009 , Spring2010 , Spring2011 , Spring2012 , Autumn2016 , Autumn2017 , Spring2020 , Spring2022 , Autumn2023

Course code	2LK009
Course name	The Healthy Human 3
Credits	16.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Medicine
Level	G1 - First cycle 1
Grading scale	Pass, Fail
Department	Department of Neuroscience
Participating institutions	<ul style="list-style-type: none"><li>• Department of Physiology and Pharmacology</li><li>• Department of Molecular Medicine and Surgery</li><li>• Department of Clinical Neuroscience</li></ul>
Decided by	Programnämnden för läkarprogrammet
Decision date	2007-03-13
Revised by	Programnämnd 2
Last revision	2012-06-26
Course syllabus valid from	Spring 2012

## **Specific entry requirements**

All credits from semester 1. Student that has failed on placement (VFU)/equivalent as a consequence of the student showing such serious deficiencies in knowledge, skills or attitudes that the patient security or the patients' trust for the healthcare have been jeopardized, is qualified to a new placement only when the individual action plan has been completed.

## **Objectives**

The aims relate to the general learning outcomes of the whole Study Programme in Medicine. The knowledge is tiered according to the SOLO taxonomy: S1) simple (e.g. know, identify), S2) compound (e.g. account for, describe), S3) related (e.g. analyse, relate), and S4) extended (e.g. theorise, analyse).

The skills are structured according to Miller's pyramid: M1) know, M2) know how to carry out, M3) be able to show, and M4) be able to carry out professionally. After the course, the student should be able to relate the basic mechanisms of life to health and disease (S3). account for surface anatomy and topographic anatomy concerning the head, neck and trunk to be able to identify pathological changes (S2). account for the structure and function of the nervous system and the senses at a molecular, cellular and organ systems level (S3). account for how an altered morphology and function in the nervous system may lead to disease (S3). account for different ways to study the structure and function of the nervous system (S2). Specific aims for the two parts of the course: Part 1: The body as an entity topography and surface anatomy Knowledge and understanding The student should be able to categorise and analyse anatomical structures in the head, neck and trunk from a surface-anatomical and topographical point of view (S3). identify anatomical structures on the basis of different radiological methods (S2). account for differences both between the sexes, and between different ages with respect to anatomic structures (S2). discover -, and also account for, pathological changes in the head, neck and trunk based on normal surface-anatomical and topographical relations (S2). account for the scientific basis of this part of the course and also have a good understanding of different scientific methods (S2). Skills The student should independently, albeit with a certain degree of supervision, be able to show how to carry out certain organ dissections (M3). be able to identify, by palpation, surface-anatomical structures and be able to indicate how internal organs are projected on the body surface (M3). through his knowledge of surface anatomy, be able to account for how the physical status is determined and also be able to account for different investigation methods, for example how ECG electrodes should be placed (M2). be able to demonstrate basic skills in assessing the physical status (M3). be able to both search and compile information based on a medical question that is related to the course contents (M2). be able to both account for and evaluate the contents of scientific articles (M3). be able to both compile and present the results of information retrieval in scientific databases (S2). Attitude The student should be able to turn the knowledge of morphology into thinking in a clinical context (S3). develop an understanding of pathology, radiology, surgery and orthopaedics (S3). show an ethical approach to the dead body (S3, M3). identify and analyse work-related ethical issues and also to maintain ethical reasoning (S3, M3). reflect on the importance of a scientific attitude in the medical profession (S2). Part 2: The Nervous system - from ion channel to behaviour Knowledge and understanding The student should be able to account for the whole chain of structures and their function, from the single ion channel in the cell membrane to sensory -, perceptive -, motor -, emotional - and cognitive functions, including behaviour (S2-3). describe basic behavioural psychological models both from an individual and from a group perspective (S3). connect behaviours to the function of the brain (S3). account for individual, age and gender related differences with regard to the structure and function of the nervous system (S2). account for how disorders of nervous system function can be discovered and also explained (S1). account for the scientific basis of this part of the course and also have a good understanding of different scientific methods (S2). Skills The student should be able to identify structures of the nervous system in anatomical and histological preparations, on anatomical models and in radiological images (M3). account for the principal procedures of functional tests carried out in the laboratory sessions with regard to vision, hearing, and the vestibular system, as well as to neurological and cognitive functions (M2). identify psychological mechanisms that affect the behaviour of people in both everyday and clinical situations, and also to analyse these behaviours on the basis of different theoretical models (M4). identify the basic scientific cause of the patient's neurological symptoms (M1). show ability to work in groups, for example in connection with laboratory sessions, dissections, microscopy and discussions (M2). both seek and compile information based on a medical question that is related to the course contents (M2). both account for and evaluate the contents of scientific articles (M3). both compile and present results of information retrieval in scientific databases (S2). Attitude The student should be able to summarize detailed knowledge about different functional subsystems of the nervous system into an overall view of the structure and function of the nervous system (S3). know how knowledge about the nervous system has been obtained and be able to search as well as make use of scientific source material (S2). be able to reflect on his/her own behaviour based on psychological models and also be able to use this knowledge to achieve increased self-awareness (S3, M3). be able to describe behavioural problems in other individuals in a constructive, not judging way (S3, M3). be able to reflect on the importance of a scientific attitude in the medical profession (S2).

# Content

**Part 1: The body as an entity topography and surface anatomy (6 higher education credits) (Kroppen som enhet ytanatomi och topografi)** Main contents The contents of this part of the course are focused on the three-dimensional relations of internal organs, vessels and nerves in the head, neck and trunk and how these structures are projected on the body surface, with the intention to provide a basis for examination techniques. palpable structures, in order to understand examination methods used for different disease symptoms of the musculoskeletal system and of organs close to the body surface. basic anatomical knowledge to enable interpretation of radiological examinations. Integration During all sections, basic science and clinical aspects will be integrated, so that clinical elements constitute at least 10% of the total contents of this part of the course. This will be accomplished through clinic-based lectures and through practical exercises in surface anatomy. Professional and scientific development is also integrated in this part. Function systems and examples of integrating assignments: Senses and the nervous system: Head-ache, hearing impairment, pain in the eye, pain in the ear, trismus, pain in the face. Circulation: Heart murmurs, swelling in extremity. Hematopoiesis and the immune system: Enlarged lymph nodes, lump in the groin, lump on the neck. Respiration: Respiratory sounds, hoarseness, difficulty in respiration, nasal obstruction and rhinitis, pain in the throat. Digestion: Anorectal pain, blood in the faeces and discoloured faeces, abdominal pain, diarrhea, constipation, jaundice, resistance in the abdomen, swallowing disorders, changed defecation habits. Metabolism and the endocrine system: Lump in the breast. The urinary organs: Blood in urine, pain in urination, thick urethral strictures, urinary incontinence. Reproduction: Pain in the pelvis, swelling and pain in testicle and scrotum. **Part 2: The Nervous System - from ion channel to behaviour (10.5 higher education credits) (Nervsystemet - från jonkanal till beteende)** This part is divided into six sections with the participation of basic scientists, as well as clinicians, as active teachers. The topic-specific core consists of neuroscience with the disciplines macro- and microscopic neuroanatomy, developmental neurobiology, cellular neurobiology, neurophysiology and medical psychology. Main contents The macroscopic and microscopic structure of the nervous system. The central and peripheral nervous systems. The macroscopic and microscopic development of the nervous system. Neurulation. Stem cells, neuronal differentiation, formation of neuronal circuits and synaptogenesis. Structural and functional aspects of individual neurons and support cells, and mechanisms for signal transduction in the nervous system. Various types of sensory systems and how they are integrated structurally and functionally. The processing in the brain of sensory information, so-called perception. The motor control system, integrated structurally and functionally. Planning, initiation and regulation of movements. Higher central nervous functions with a description of psychological mechanisms. Regulation of behaviours, wakefulness, sleep, emotion, attention and stress. Social interaction, behaviour during disease, learning, memory, cognition and language. Integration During all sections, basic science and clinical aspects will be integrated, so that clinical elements constitute at least 10% of the total contents of this part of the course. This will be accomplished through clinic-based lectures and through seminars on patient cases under supervision of clinical teachers, and at clinical placement education. In addition, professional and scientific development are integrated in this part of the course. Function systems and examples of integrating assignments: Senses and the nervous system: Hearing impairment, sensory disorder, pain, vision disorder, dizziness, buzzing. Mental: Aggressiveness and irritability, addiction and abuse, depressivity, disorientation and confusion, deteriorated intellect, learning and memory problems, personality disorder, stress and crisis reactions, sleep disorder, fatigue, anxiety and uneasiness. Movement: Abnormal and unsteady gait, dyskinesia and tremor, trauma and injury.

## **The Nervous system - from ion channel to behaviour, 10.5 hp**

Grading scale: GU

## **The body as an entity - topography and surface anatomy, 6.0 hp**

Grading scale: GU

## Teaching methods

During the course, general lectures are given. A considerable part of the teaching consists of problem-oriented supervised activities, for example seminars, dissections and group assignments in practical surface anatomy, workshops on neuroanatomy and neurohistology, neurophysiological laboratory exercises and computer-based laboratory exercises, group assignments on patient cases.

## Examination

Part 1: The body as an entity topography and surface anatomy This part is concluded with a written examination and a practical test of surface-anatomical and topographical knowledge. Part 2: The Nervous system - from ion channel to behaviour During the different sections of this part, examining seminars (tests) are carried out. These seminars serve both as support for, and control of, the student's knowledge acquisition, and as forums to discuss, clarify and deepen the theme of the section. Compulsory attendance is required at examining seminars. Make-up opportunities are provided during the current course. The part is concluded with a written examination that contains a number of themes where structure and function are integrated. Overall aims of professional development The examination is arranged either through a portfolio or written home exam. The student is free to choose examination form. In case of an unsatisfactory examination, the student must supplement, according to instructions of the examiner. Limitation of the number of examinations or practical training sessions applies The number of examination and practical training sessions follows the local guidelines of Karolinska Institutet, implying that the number of examinations is limited to 6, while placement, as a rule, may be repeated only once. The examiner may with immediate effect interrupt a student's clinical rotation (VFU), or the equivalent, if the student demonstrates such serious deficiencies in knowledge, skills or attitudes that patient safety or patient confidence in healthcare is at risk. When clinical rotation is interrupted according to this, it implies that the student fails in the current part, and that one clinical rotation opportunity is used up. In such cases, an individual action plan should be set up for required activities and examinations, before the student is given a possibility for a new clinical rotation in the course.

## Transitional provisions

If a course has been closed down or undergone major changes, at least two additional examinations (excluding regular examinations) on the previous contents are provided during a period of one year from the date of the change.

## Other directives

A course evaluation will be conducted according to the guidelines established by the Board of Education.

## Literature and other teaching aids

*Moore, Keith L.; Dalley, Arthur F.; Agur, Anne M. R.*

### **Clinically oriented anatomy**

6. ed. : Philadelphia, Pa. : Wolters Kluwer Health/Lippincott Williams & Wilkins, cop. 2010 [dvs 2009] - xxix, 1134 s.

ISBN:978-1-60547-652-0 (international ed.) LIBRIS-ID:11309709

[Library search](#)

*Feneis, Heinz; Dauber, Wolfgang*

### **Anatomisk bildordbok**

*Spitzer, Gerhard; Brinkman, Ingrid*

5., utökade uppl. /b [fackgranskning: Håkan Aldskogius] : Stockholm : Liber, 2006 - [4], 520 s.

ISBN:91-47-05301-1 LIBRIS-ID:10162715

URL: <http://www2.liber.se/bilder/omslag/100/4705301o.jpg>

[Library search](#)

*Sobotta, Johannes*

**Sobotta atlas of human anatomy.n Vol. 1,p Head, Neck, Upper Limb**

*Putz, Reinhard; Pabst, Reinhard; Bedoui, S.*

14. ed. : München : Elsevier Urban & Fischer, 2006 - 419 s.

ISBN:0-443-10348-8 (inb.) LIBRIS-ID:10138132

[Library search](#)

*Sobotta, Johannes*

**Sobotta atlas of human anatomy. Atlas of human anatomy.**

*Putz, Reinhard; Pabst, Reinhard*

*Bedoui, S.*

14. ed. : München : Elsevier Urban & Fischer, 2006 - 399 s.

ISBN:0-443-10349-6 (inb.) LIBRIS-ID:10138133

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**Atlas of anatomy : Latin nomenclature**

*Gilroy, Anne M.; MacPherson, Brian R.; Ross, Lawrence M.; Schünke, Michael.; Schulte, Erik.; Schumacher, Udo.*

New York : Thieme Medical, 2009 - xv, 656 p.

ISBN:1-60406-099-9 LIBRIS-ID:11505359

[Library search](#)

*Tank, Patrick W.; Gest, Thomas R.*

**Lippincott Williams & Wilkins' Atlas of anatomy Atlas of anatomy.**

*Burkel, William*

Latin ed. : Philadelphia, Pa. : Wolters Kluwer Health/Lippincott Williams & Wilkins, cop. 2009 - xv, 432 s.

ISBN:978-0-7817-8866-3 (hft.) LIBRIS-ID:11223180

[Library search](#)

**Neuroscience**

*Purves, Dale*

5. ed. : Sunderland, Mass. : Sinauer Associates, cop. 2012 - xvi, 759 s.

ISBN:978-0-87893-695-3 (hbk.) LIBRIS-ID:12074995

[Library search](#)

*Haines, Duane E.*

**Neuroanatomy : an atlas of structures, sections, and systems**

7. ed. : Philadelphia, Pa. : Lippincott Williams & Wilkins, cop. 2008 - x, 341 s.

ISBN:978-0-7817-6328-8 LIBRIS-ID:10510546

[Library search](#)

*Myers, David G.*

**Psychology**

9th ed. : New York : W. H. Freeman ;a Basingstoke :b Palgrave [distributor], 2008 - 721, [156] s.

ISBN:978-1-4292-1597-8 (hbk.) LIBRIS-ID:11299790

[Library search](#)