Course syllabus for

The Healthy Human 2, 30 credits

Den friska människan 2, 30 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:
Spring2008 , Autumn2008 , Spring2009 , Autumn2009 , Spring2010 , Autumn2011 , Spring2013 , Autumn2013 , Autumn2014 , Spring2015 , Autumn2015 , Spring2016 , Autumn2016 , Autumn2017 , Spring2018 , Autumn2019 , Spring2020 , Autumn2020 , Autumn2021

Course code	2LK002
Course name	The Healthy Human 2
Credits	30 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 Physiology and Pharmacology
Participating institutions	• Department of Microbiology, Tumor and Cell Biology • Department of Medical Biochemistry and Biophysics • Department of Neuroscience • Department of Molecular Medicine and Surgery
Decided by	Pn för läkarprogrammet
Decision date	2007-03-13
Revised by	Programnämnden för läkarprogrammet
Last revision	2008-08-19
Course syllabus valid from	Autumn 2008

Specific entry requirements

12 HE credits from semester 1 on the Study Programme in Medicine.

Objectives

The aims relate to the general learning outcomes of the whole Study Programme in Medicine. Aims concerning knowledge and understanding are structured according to the SOLO taxonomy: S1) simple (e.g. know, identify), S2) compound (e.g. account for, describe), S3) related (e.g. analyse, relate to), and S4) extended (e.g. theorise, analyse). Practical skills outcomes are tiered 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. The specific outcomes of the different parts of the course: Part 1: Hematopoiesis, the immune system, circulation and respiration Knowledge and understanding The student should be able to account for the blood circulation, the respiration, the hematopoiesis and the immune system, with respect to structure and function, from cell level to organ system level (S2). be familiar with individual differences and differences related to sex and age in the structure and function of these systems (S1). account for and analyse how the different systems interact in the control of the internal environment of the body (S3), predict, understand and account for how a changed structure and function in these systems can lead to disease (S2-3). be familiar with different ways to study morphology and function (S1). Skills The student should know how to carry out ECG registration, orthostatic test, static and dynamic spirometry and blood gas analysis (M1). be able to measure and register pulse and blood pressure (M3). be able to identify respiratory sounds and heartbeats (M3). be able to demonstrate anatomical structures in dissected organs, in plastic models and in radiological images, and be able to identify tissues in histological preparations (M2). Attitude The student should know how knowledge of current organ and function systems has been obtained and be able to distinguish scientifically based knowledge from proven experience (S2). be able to sum up detailed knowledge concerning hematopoiesis, immune system, circulation and respiration to an overall picture (S3). Part 2: The urinary organs, the body fluids, the endocrine system and reproduction Knowledge and understanding The student should be able to account for the urinary organs, the structure and function of the endocrine organs and the reproductive organs, from cell level to organ system level (S2) account for how the urinary organs and endocrine system in collaboration with other factors participate in urine production, fluid balance and acid/base balance (S2-3). be familiar with individual, sex and age related differences in structure and function concerning the urinary organs (S1) and be able to account for the equivalent concerning the endocrine system and the reproduction (S2). how the above system interacts in the control of the internal environment of the body (S3) and be able to predict, understand and explain how a changed structure and function can lead to disease (S2-3). be familiar with different ways to study the morphology and function of the different systems (S1) . Skills The student should know how to carry out kidney clearance determination, dehydration testing and blood gas analysis (M1). be familiar with basic principles of different methods to decide hormone level, as well as of some function tests of hormonal systems (M1). be familiar with basic methods in fertility investigations (M1). know principles for the interpretation of acid/base status (M2). be able to demonstrate anatomical structures in dissected organs, in plastic models and in radiological images, and be able to identify tissues in histological preparations (M2). Attitude The student should know how knowledge of current organ and function systems has been obtained (S1) and be able to distinguish scientifically based knowledge from proven experience (S2). be able to sum up detailed knowledge of the structure and function to an overall picture of the urinary organs, the reproductive organs and the endocrine system (S3) . Part 3: Human in motion Knowledge and understanding The student should be able to account for the structure and function of the musculoskeletal system system from cellular level to organ system level (S2) analyse the relationship between the anatomic conditions of the musculoskeletal system and functional capacity (S3). account for how the musculoskeletal system changes during growth as well as aging, and be able to explain the beneficial effect of physical activity and training (S2). be familiar with individual and gender specific differences in the structure and function (S1) of the musculoskeletal system. predict how a changed structure and function in the musculoskeletal system may lead to disease, and be able to give examples of both common hereditary variations and common abnormalities (S2-3). Skills The student should be able to demonstrate the anatomic structures of the musculoskeletal system in dissected organs, in plastic models and in radiological images, and be able to identify current tissues in histological preparations (M3). be able to make a basic physical examination including being able to carry out function tests of joints and musculature (M3). know how to carry out work tests and electromyography (M2). Attitude The student should be able to sum up detailed knowledge of the anatomy of the musculoskeletal system and its function to an overall picture (S3). combine scientific source material and survey papers of the musculoskeletal system to be able to analyse the relationships between structure and function (S3). describe how the cooperation between the musculoskeletal system and other organ systems affect the individual's movements and physical capacity (S3). Overall aims of scientific development (VetU) Knowledge and understanding The student should be able to account for basic scientific concepts (S2) and be familiar with methods within medical basic research (S1). define and reflect over the concept of good research ethics (S2-3). Skills The student should be able to formulate an

adequate search strategy on the basis of a given issue and also be able to adapt the search strategy to the chosen database and/or selected source of information and be able to analyse the quality regarding different search strategies (M3). be able to both search and compile information based on a given medical question that is related to the course contents (M2). be familiar with the major medical information offer (S1). Attitude The student should be able to reflect on the importance of a scientific attitude within medicine (S2). Overall aims of professional development (PD). Knowledge/understanding The student should be able to define central ethical concepts (S2). define basic concepts in medical psychology (S2) account for professional ethical rules and for different ethical systems of relevance to medical ethics (S3) Skills The student should be able to identify ethical problems and also be able to analyse and argue rationally about them (M4). identify psychological issues (M2) be able to conduct interviews with patients in a patient-centered way (M2) Attitudes The student should be able to respond to patients as well as family and colleagues, and others concerned in a respectful way and also be able to reflect on different interests at stake (S3, M3).

Content

The course is organised in three main parts and a completing fourth part. The fourth part consists of a written final examination that can be preceded by integrating and summarising elements. Primary care, professional development and scientific development are integrated in the course. Part 1: Hematopoiesis, the immune system, circulation and respiration (Blood, the immune system, circulation, respiration), 8.5 credits This part is divided in three sections. Both basic scientific and clinically active teachers participate in the teaching. The topic-specific core consists of the basic scientific disciplines macro and microscopical anatomy, physiology, medical biochemistry and immunology. Hematopoiesis and the immune system: The blood components and properties. The importance of the blood for respiration, circulation, hemostasis, communication and transport . The molecular, cellular and histological structure of the immune system and the normal functions of the system. Circulation: The basic morphology and characteristics of heart musculature. The anatomy, histology and normal functions and regulation of the heart and the blood vessels .. Respiration: The anatomy and histology and normal functions and regulation of the lungs and the upper and lower airways. In connection with the teaching of the respective function area, practical parts focusing on clinical examination methods are implemented. Basic science and clinic are integrated in each function area, with examples drawn from pathophysiology and with illustrations from the primary care placement. Function systems that may be discussed with included integrating assignments. Circulation: Chest pain, heart murmurs, heart arrests, high blood pressure, low blood pressure, abnormal heart activity, faint/collapse, swelling in extremity, oedemas. Respiration: Dyspnea, respiratory sounds, respiration difficulties, cyanosis, cough unconsciousness/coma. Hematopoiesis and the immune system: Paleness, hemorrhagic disorder, fever, enlarged lymph nodes, lump in the groin, lump in the throat Part 2: Urogenital organs, body fluids, the endocrine system, reproduction (Urogenital organs, body fluid, the endocrine system, reproduction), 8.5 credits This part is divided in three sections. Both basic scientific and clinically active teachers participate in the teaching. The topic-specific core consists of the basic scientific disciplines macro and microscopical anatomy, physiology, medical biochemistry and immunology. The urinary organs: The anatomy, histology and function of the kidneys and the urinary tract. Regulation of fluid, electrolyte and acid/base balance. Endocrinology: Hormone-producing cells, tissues and the histology and anatomy of the glands. The chemistry, production and effects of hormones, and the regulation of hormonal systems. Reproduction: The development, histology and anatomy of female and male external and internal genital organ. The structure of the pelvis and birth canal. Sex differentiation. The morphology and function of germ cells. The effects and regulation of gonadal hormones. Fertilisation. Pregnancy. Basic science and clinic are integrated in each function area, with examples drawn from pathophysiology and with illustrations from the primary care placement. Function systems that may be treated,with included integrating assignments: The urinary organs: Blood in urine, pain in urination, thick urethral strictures, urinary incontinence, large and small amount of urine, increased thirst, high blood pressure, abnormal heart activity, increased sweating. Metabolism and the endocrine system: tiredness, dizziness, head-ache, swelling, arrhythmia, high blood pressure, low vision, depression, sleep disorders, diarrhea, constipation, muscle weakness, weight loss, weight gain/overweight, increased hair growth, increased sweating, increased thirst. Reproduction: Pregnancy and labour, infertility and sexual dysfunction,

abnormal vaginal bleeding, swelling in testicle and scrotum. Part 3: Human in motion (The musculoskeletal system and exercise), 6.0 credits The part consists of 3 sections, which are provided by basic scientific and clinically active teachers. The topic-specific core of the part consists of the basic scientific disciplines macro and microscopical anatomy and physiology. The placement in the primary care is integrated with basic scientific teaching. Cell and tissue theory. Cell biology-related properties and the cell types. Bone, cartilage, tendon and muscle tissue morphology and the physiology of muscle fibres. The structure and internal organisation with muscle fibres and motor units. Innervation of both motor units, and of the sensory system of skeletal musculature, tendons and joints. Basic kinesiology (motion theory), that is general principles of joints and motion axes and the impact of muscles on the joints. The anatomy of the musculoskeletal system. The bases concerning the physical status of joints, muscles, in other words, the manual study of the musculoskeletal system. Radiological reproduction of the musculoskeletal system. Normal variations and development defect. Adaptation to physical work. Effects of physical training. Effects of aging. Certain basic disease concepts in the musculoskeletal system, inter alia those that are secondary to endocrine disorders. Function systems that may be treated,with included integrating assignments: Asthenia, abnormal and unsteady gait, dyskinesia and tremor; pain in neck, shoulder and back, trauma and injury, and learning disability. Part 4: Integration and exam (Integration and exam), 7.0 credits The course is completed with a summary and integration of parts 1-3 and a final integrating written examination.

Blood, the immune system, circulation, respiration, 8.5 hp

Grading scale: GU

Urogenital organs, body fluids, the endocrine system, rep..., 8.5 hp

Grading scale: GU

The musculoskeletal system and exercise, 6.0 hp

Grading scale: GU

Integration and exam, 7.0 hp

Grading scale: GU

Teaching methods

The teaching of parts 1-3 is provided in the form of lectures, integrating seminars, group tuition, laboratory sessions, group exercises, patient demonstrations, microscopy, advanced assignments, project work and studies of scientific texts,. The development of an ethical attitude is trained via ethical analysis, argumentation and reflection. Basic knowledge in medical psychology is provided in lectures and applied in exercises. Consultation skills are trained in group tuition. The student also has access to study questions and interactive web-based teaching materials.

Examination

Part 1 Blood, the immune system, circulation, respiration is examined in the form of presentations of seminar assignments and written or oral test. Part 2 Urogenital organs, body fluid, the endocrine system, reproduction is examined through presentation of group assignments and two oral tests. A joint station examination is carried out of anatomy and histology during the two first parts. Part 3, The musculoskeletal system and exercise is examined continuously in the form of seminars, presentation of dissections and examination techniques, web-based examination of preparations in histology, and presentation of patient cases. For compulsory laboratory sessions and tests during parts 1-3, a make-up session is provided during the course. Make-up opportunities may have a form that differs from the regular session, e.g. a written examination or written assignment. Professional development is examined

through reflective portfolio sheets. If the portfolio sheets are insufficient, the student must make-up according to the instructions of the examiner. The teaching days in professional development have compulsory attendance as a requirement for passing the course. In case of absence, a complementary written assignment is given. The clinical teaching takes place within the primary care, and attendance is required for passing the course. In case of absence, supplementary clinical teaching which is offered two times, is assigned. 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.

Transitional provisions

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

Other directives

Evaluation will take place in accordance with the instructions of the Board of Education. Furthermore, evaluation will take place continuously during the course, with web-based questionnaires. Continuous dialogue with the course participants also takes place via an established course council. The examiner may with immediate effect interrupt a student's placement if the student demonstrates such serious deficiencies in knowledge, skills or attitudes that patient safety or patient confidence in healthcare is at risk. If the placement is interrupted, it implies that the student fails in the current part. In such cases, an individual action plan should be set up, where it comes clear which activities and examinations are required, before the student is given the possibility to further placement.

Literature and other teaching aids

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

Clinically oriented anatomy

5. ed. : Philadelphia : Lippincott Williams & Wilkins, cop. 2006 - 1209 s.

ISBN:0-7817-3639-0 LIBRIS-ID:9800901

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

Platzer, Werner

Color atlas and textbook of human anatomy.n Vol. 1,p Locomotor system

5. ed. : Stuttgart : Thieme, cop. 2004 - 462 s.

ISBN:3-13-533305-1 LIBRIS-ID:9212827

Library search

Moore, Keith L.; Agur, Anne M. R.

Essential clinical anatomy

3., [rev.] ed. : Philadelphia : Lippincott Williams & Wilkins, cop. 2007 - xx, 692 s.

ISBN:0-7817-6274-X LIBRIS-ID:10155388
Library search

Brunnström, Signe
Brunnstrom's Clinical kinesiology.
Smith, Laura K.; Weiss, Elizabeth Lawrence; Lehmkuhl, L. Don

5. ed. /b revised by Laura K. Smith, Elizabeth Lawrence Weiss, L. Don Lehmkuhl : Philadelphia : F.A. Davis, cop. 1996 - 468 s.
ISBN:0-8036-7916-5 LIBRIS-ID:5688170
Library search

Snell, Richard S.; Snell, Richard S.t Clinical anatomy for medical students.
Clinical anatomy

7. ed. : Philadelphia : Lippincott Williams & Wilkins, cop. 2004 - x, 1012 s.
ISBN:0-7817-4315-X LIBRIS-ID:9023138
Library search

Guyton, Arthur C.; Hall, John E.
Textbook of medical physiology

11. ed. [rev.] : Philadelphia : Elsevier Saunders, cop. 2006 - xxxv, 1116 s.
ISBN:0-7216-0240-1 LIBRIS-ID:9893191
Library search

Medical physiology : a cellular and molecular approach
Boron, Walter F.; Boulpaep, Emile L.

Philadelphia, PA : Saunders, cop. 2003 - 1319 s.
ISBN:0-7216-3256-4 LIBRIS-ID:8520181
Library search

Ross, Michael H.
Histology : a text and atlas
Pawlina, Wojciech

5. ed. : Philadelphia, Pa. : Lippincott Williams & Wilkins, cop. 2006 - 906 s.
ISBN:0-7817-5056-3 LIBRIS-ID:9974719
Library search

Abbas, Abul K.; Lichtman, Andrew H.
Basic immunology : functions and disorders of the immune system

2. ed., updated ed. 2006-2007 : Philadelphia, Pa. : Elsevier/Saunders, 2006 - ix, 324 s.
ISBN:1-4160-2974-5 LIBRIS-ID:10097070
Library search

Immunobiology : the immune system in health and disease
Janeway, Charles A.

6. ed. : New York : Garland, cop. 2005 - 823 s.
ISBN:0-8153-4101-6 (Garland) LIBRIS-ID:9293790
Library search

Brändén, Henrik; Andersson, Jan
Grundläggande immunologi
Engqvist, Jeanette; Sonesson, Johan

3., [uppdaterade och omarb.] uppl. /b [illustrationer: Jeanette Engqvist samt Johan Sonesson] : Lund :

Studentlitteratur, 2004 - 354 s.
ISBN:91-44-03073-8 LIBRIS-ID:9522851
Library search

Parham, Peter
The immune system

2. ed. : New York : Garland Science, cop. 2005 - xv, 431 s.
ISBN:0-8153-4093-1 (hft.) LIBRIS-ID:9351225
Library search

Dale Purves; George J. Augustine; David Fitzpatrick
Neuroscience Including Sylvius CDROM

WH Freeman, 2004
ISBN:0-87893-725-0 (inb.) LIBRIS-ID:10058274
Library search