Course syllabus for

The Healthy Human 1, 24 credits

Den friska människan 1, 24 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:
Autumn2007 , Autumn2008 , Spring2009 , Autumn2009 , Spring2010 , Autumn2010 , Spring2011 , Autumn2011 , Autumn2012 , Spring2013 , Autumn2013 , Spring2014 , Autumn2014 , Spring2015 , Autumn2015

Course code	2LK000
Course name	The Healthy Human 1
Credits	24 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 Medical Biochemistry and Biophysics
Participating institutions	• Department of Physiology and Pharmacology • Department of Neuroscience • Department of Cell and Molecular Biology
Decided by	Programnämnden för Läkarprogrammet
Decision date	2007-03-13
Revised by	Programme Committee 2
Last revision	2014-10-14
Course syllabus valid from	Spring 2015

Specific entry requirements

Biology 2, Physics 2, Chemistry 2, Mathematics 4 (field specific entry requirements A13). Or: Biology B, Physics B, Chemistry B, Mathematics D (field specific entry requirements 13).

Objectives

Goals

The goals of the course are that the student should acquire basic knowledge, proficency and attitudes for

the medical profession based on developmental biology, digestion and metabolism in the healthy human being. In addition the student should acquire basic biochemical and cell biological knowledge of importance for the remaining medical education and the medical profession.

Learning outcomes

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 practical skills 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 learning outcomes of the course are divided in learning outcomes for the respective parts of the course. The course specific aims of scientific development are integrated with the aims of the parts.

Part 1: Basic Structure and Development – from egg to embryo

Knowledge and understanding

The student should
• be familiar with basic anatomic terminology and, at adult, be able to account for the structure and function of the organ systems at a general level especially respect circulation - and the respiratory organs, the urinary organs, the nervous system and the endocrine bodies (S1).
• be able to account for the chemical building blocks of the cell (S1-S3).
• be able to account for the microscopic structure of the cell and its most important functions and for the structure and function of the different cell organelles (S2) .
• be familiar with basic genetic terminology, be able to account for the organisation of the genome and its development at cellular, cromosomal and gene levels, and be able to explain the basic molecular genetic mechanisms in relation to the structures and functions of the cells (S3).
• be able to account for the molecular mechanisms of developmental biology, for the development of the cells in the most important tissue types, for the turnover of the cells, and for the individual's development, from the formation of germ cells to embryo, and also be able to account for all this in relation to heredity and environment (S2).
• be able to account for cell growth, cell specialisation, cell motion and interactions between cells, and be able to explain how the interactions facilitate the development of a multicellular organism (S3).
• for both simple and complex genetic diseases, be able to discuss the relationship between heredity and environment on the one hand and phenotype on the other (S4).

• account for different types of mutations, for factors that cause mutations and for mechanisms that the cell uses to retain genomic integrity (S2).

Skills

The student should be able to
• use models to analyse, sensitise and learn complex connections around basic cell biology-related mechanisms such as around the different function systems of the body (M2).

Attitude

Knowledge and attitude
The student should be able to
• demonstrate an understanding how human phenotype is results of the interplay between individual inheritance and development in a complex and varying environment (S1).

Part 2: Digestion and metabolism

Knowledge and understanding

The system of man, in balance and in imbalance
The student should be able to account for
• cellular communication and membrane transport (S1-S3).
• the structure and function of the digestive tract, and also be able to relate this knowledge to how different nutrients are digested and absorbed (S1-S3).
• the metabolism of carbohydrates, lipids, proteins and nucleotides and also be able to relate this knowledge to various metabolic conditions as well as to various diseases (S1-S3).

• the structure and function of the liver, and of the relation of the liver to the digestive tract, and to be able to relate this knowledge to different symptoms and diseases (S1-S3).
• the structure and function of the pancreas, and of the relation of pancreas to the digestive tract and to the metabolism, and to be able to relate this knowledge to different symptoms and to different diseases (S1-S3).
• the importance of macro- and micro- nutrients for body functions and establishment of health, and to to understand the basis for the nutritional recommendations (S1-S3).

Skills

The student should be able to
• take capillary blood samples, be able to carry out oral glucose tolerance test, be able to analyse lactate, blood lipids and enzymes and be able to present and discuss the results (M1 - M2).
• protect oneself against infection as well as against damage when handling blood and chemicals (M1-M2).
• collect and analyse information on both basic scientific and clinical issues and be able to present the results (M2).
• use microscopy (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).
• be able to work in a mixed group and present, together with the group, jointly obtained results (M1).

Attitude

The student should
• through an analytical attitude, be able to understand the genesis mechanisms of diseases (S3).
• be able to show respect for the dead body (S3).

Part 3: The primary care
Overall aims for the primary care

Knowledge and understanding

The student should
• know the most common examination instruments and the use of these (S1).
• be able to account for hygienic instructions concerning working clothes and in connection with blood sampling (S2).
• be familiar with methodologies in connection with simple laboratory sampling (S1).
• be able to define the patient's part in the consultation (S2) and have general knowledge of different responses when talking with patient (S2).
• be able to define the professional secrecy (S2).

Skills

The student should
• be able to use stethoscope, blood pressure gauge and reflex hammer in an adequate way (M1).
• be able to talk to a patient at home visits from a patient-centered perspective and be able to reflect around this talk (M2).

Attitude

The student should
• in a respectful way be able to counter patients, relatives and staff (S2).

Content

The course is organised in two principal parts, a primary care part and a final part that consists of integrating and summarising elements as well as a written final examination. The primary care (PV) constitute one of many arenas where teaching is carried out during the DFM1 course. Professional skills (PU) and scholarly development (VetU) is integrated in the course but belongs organizationally to the Introductory course.

Basic Structure and Development - from Egg to Embryo, 6.5 hp The part, that is based on human development from germ cells to embryo, give an introduction to the most important functions and structures of the cell and to embryology, and to the molecular mechanisms of developmental biology.

The initial sub-part of the part gives an introduction to the structure and function of the organ systems of the adult individual, and to anatomic terminology. This part comprises the circulation and respiratory organs, the urinary organs, the nervous system and the endocrine organs. The initial sub-part of the part also gives an introduction the structure and function of molecules. Under the main part of the part basic functions are discussed, at molecular and cellular levels with a special focus on mechanisms enabling a multicellular organism to develop i.e. growth and heredity, interactions between cells, cell motion, cell transport and cell specialization. The knowledge is enhanced in basic scientific and clinical lectures, during group discussions, in teaching sessions, through modelling and via the production of models.

The topic-specific core of the part consists of the basic scientific disciplines cell and molecular biology and developmental biology.

During this part, the function systems metabolism and the endocrine system, reproduction, movement, skin, and development and aging, are treated. **Digestion and Metabolism, 10 hp** The part treats in an integrated way
• the structure and function of the digestive tract and the accesory organs on a molecular-, subcellular-, cellular-, tissue- and organ level.
• the organisation and regulation of chemical life processes.
• the structure and function of molecules and cells.
• nutrition physiological aspects and the relation to common national diseases.

The topic-specific core of the part consists of the basic scientific disciplines macroscopic and microscopic anatomy, medical biochemistry, physiology and endocrinology.

This part treats the function systems digestion, metabolism and the endocrine system, circulation, hematopoiesis and the immune system.

The link between clinic and pathology takes place primarily with regard to the "metabolic syndrome", that is, between diabetes and hyperlipidemia on the one hand and atherosclerosis, obesity and hypertension on the other. The connection, however, is also made to disturbances in the digestive tract. The knowledge is enhanced both via clinic lectures, and, in some cases, via meetings with patients.

The scientific core of the part consists of laboratory sessions, which are examined orally or in writing. The core also includes the ability to analyse basic scientific articles and to analyse bases for e. g. diets and diet recommendations. **Primary care, 1.5 hp** The teaching of Primary care is given during four days. Two days are located to Centre for Family medicine (CeFAM) and two days are located to care centre. The student obtains an introduction to status - and consultatory skills through theoretical teaching and practical exercises. In a primary care centre, the student meet patients with different diseases, some of which are relevant to the theoretical teaching, and start under supervision training of status - and consultation skills. **Integration with final examination, 6 hp** The final parts of the course include integrating lectures, self-study and question sessions, and a final examination of the basic scientific core of parts 1 and 2.

Integration between clinic and basic science

In the course, the following function systems are treated, illustrated by the listed integrating assignments:
• Digestion: Bloody vomiting, blood in/discoloured faeces, abdominal pain, abdominal swelling, diarrhea, constipation, jaundice, heartburn/sour eructations, vomitings/inappetence/nausea, resistance in abdomen, swallowing disorders, changed faeces habits, eating disorders.

• Metabolism and the endocrine system: Lump in the breast, weight loss, weight gain/overweight, increased thirst.
• Circulation: High blood pressure, swelling in extremity, oedemas.
• Hematopoiesis and the immune system: Paleness, hemorrhagic disorder.
• Reproduction: Pregnancy, infertility/sexual dysfunction.
• Motion: Dyskinesia, weakness.
• Skin: Wounds.
• Development and aging: Dying patient, abnormality, deviant growth, deviant motor development.

The clinical teaching is to a great extent integrated with the basic scientific teaching. The teaching is mainly given within the primary care and on CeFAM.

Teaching methods

Part 1: Basic structure and Development – from egg to embryo
In the elements with systematic anatomy and biochemistry, the main working methods are lectures and group assignments, lectures seminars and self-study with teacher support.
The molecular and cellular basic mechanisms of life, as well as developmental biology, are high-lighted with both basic scientific and clinical lectures with teaching sessions and discussions, and through modelling where important concepts are compared and related.

Part 2: Digestion and metabolism
The part comprises both of theoretical and practical teaching in the form of lectures, patient examples from the clinic and project work, where larger problems are treated. A part of the teaching takes place in the form of self-study with teacher support. The part also includes, laboratory sessions under supervision and demonstration of anatomical and histological preparations.

Part 3: The primary care
The teaching consists of lectures, practical exercises, group discussions and forum theatre. In a primary care centre, the teaching consist of group tuition, auscultation, training of status - and consultation skills under supervision, patient interviews in connection with visits in their home and auscultation in the laboratory.

Part 4: Integration with final examination
The final parts of the course contain summarising lectures, reflection, self-study and question times and a final integrating examination extensive the principal parts 1 and 2.

The course overlaps in time partly with the Introductory course and some of the PU- and VetU-parts related to the Introductory course take place during the course.

In case of absence
The course director assesses if and how absence from compulsory education elements can be taken again. Before the student has participated in the compulsory education elements or recovered absence in accordance with the instructions of the course coordinator, the final report may not be entered. Absence from a compulsory education element may lead to the student not being able to take the element again until next time the course is given.

Examination

Part 1: Basic structure and Development – from egg to embryo
The part is examined both with self-evaluations, and with oral, written or IT-based tests. The models are presented with an exhibition around a medical theme.

Part 2: Digestion and metabolism
Overviews and lectures on safety and laboratory sessions are compulsory.
The part is examined by oral, written or IT-supported tests. The laboratory sessions are examined in groups through oral presentation. Project works are examined in groups through oral presentations.

Part 3: The primary care
For the teaching within the primary care and during the CeFAM-days, compulsory attendance applies.

Part 4: Integration with final examination
For participation in the written examination, approved compulsory tests under Part 1 and Part 2 are required.

The final examination that is in writing covers knowledge from the simple to the more advanced levels. The student is hereby given the possibility to relate, compare, analyse and discuss different phenomena. A part of the examination can be based on scientific publications.

Compensation of absence from compulsory subparts:
Tests, quiz, laboratory sessions, safety lectures, safety sessions, presentations of project work and laboratory sessions and teaching within the primary care are compulsory. Absentee compensation takes place according to the examiner's instructions or when appropriate according to instructions from the supervisor within the primary care or the person responsible for the semester regarding the primary care (CeFAM).

Limitations of the number of examinations or practical training sessions
A student who do not pass the regular examination is entitled to re-sit the examination on five more occasions. If the student has carried out six failed examinations/tests the student will not be given any additional examination. Submission of a blank examination is also counted as an examination. For parts with clinical rotation the rule is that they can only be repeated once.

Interruption of VFU
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.

Eligibility to a new VFU
Student that has failed one placement (VFU), or the equivalent, due to the fact that the student has shown so serious deficiencies in knowledge, skills or attitudes that the patient security or the patients' trust for the healthcare have been jeopardised is qualified for a new placement in VFU/equivalent only when the individual action plan have been completed.

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

Course evaluation is carried out according to guidelines that are established by the board of education.

Teaching and presentations in English occur.

Literature and other teaching aids

Ferrier, Denise R.
Biochemistry

6. ed. : Lippincott Williams and Wilkins, 2013

ISBN:978-1-4511-7562-2 LIBRIS-ID:13993817
Library search

Erlanson-Albertsson, Charlotte; Gullberg, Urban
Cellbiologi

2., [rev. och uppdaterade] uppl. : Lund : Studentlitteratur, 2007 - 350 s.
ISBN:978-91-44-04738-6 LIBRIS-ID:10532220
Library search

Baynes, John W.; Dominiczak, Marek H.
Medical biochemistry

3. ed. : [Edinburgh] : Mosby Elsevier, cop. 2009 - xxv, 653 s.
ISBN:978-0-323-05371-6 (pbk.) LIBRIS-ID:11369741
Library search

Berg, Jeremy M.; Tymoczko, John L.; Stryer, Lubert
Biochemistry

7. ed., International ed. : Basingstoke : Palgrave Macmillan, cop. 2012 - xxxii, 1098, [78] s.
ISBN:978-1-4292-7635-1 LIBRIS-ID:12135215
Library search

Devlin, Thomas M.
Textbook of biochemistry : with clinical correlations

7th ed. : Hoboken, NJ : John Wiley & Sons, c2011. - xxxii, 1204 p.
ISBN:978-0-470-28173-4 (cloth) LIBRIS-ID:11805419
Library search

Nelson, David L.; Cox, Michael M.; Lehninger, Albert L.
Lehninger principles of biochemistry Principles of biochemistry

6. ed., internat. ed. : New York, NY : Freeman, 2013 - 1198 s. + app. (var. pag.)
ISBN:1464109621 LIBRIS-ID:13989282
Library search

Laurells Klinisk kemi i praktisk medicin
Nilsson-Ehle, Peter; Berggren Söderlund, Maria; Theodorsson, Elvar; Becker, Charlotte
Laurell, Carl-Bertil

9., [rev. och utök.] uppl. : Lund : Studentlitteratur, 2012 - 733 s.
ISBN:978-91-44-04787-4 (inb.) LIBRIS-ID:12532093
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

Moore, Keith L.; Dalley, Arthur F.; Agur, A. M. R.
Clinically oriented anatomy

7th ed. : Philadelphia, Pa. : Lippincott Williams & Wilkins, 2013. - 1168 p.

ISBN:9781451184471 (pbk.) LIBRIS-ID:14182772
Library search

Moore, Keith L.; Agur, A. M. R.; Dalley, Arthur F.
Essential clinical anatomy

4th ed.,International ed. : Philadelphia : Wolters Kluwer/Lippincott Williams & Wilkins, c2011. - xxviii, 703 p.
ISBN:1-60913-112-6 (pbk.) LIBRIS-ID:12034326
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

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

Updated 2. ed. : Philadelphia, Pa : Saunders Elsevier, cop. 2012 - xii, 1337 s.
ISBN:978-0-8089-2449-4 (international ed.) LIBRIS-ID:12505054
Library search

Rhoades, Rodney.; Bell, David R.
Medical physiology : principles for clinical medicine

4th ed. : Philadelphia : Wolters Kluwer Health/Lippincott Williams & Wilkins, c2013. - xvi, 819 p.
ISBN:978-1 511-1039-5 LIBRIS-ID:14002815
Library search

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

12th ed. : Philadelphia, PA : Saunders/Elsevier, c2011. - 1091 s.
ISBN:978-1-4160-4574-8 (alk. paper) LIBRIS-ID:11884625
Library search

Silbernagl, Stefan; Despopoulos, Agamemnon
Color atlas of physiology

6. ed., completely rev. and expanded : Stuttgart : Thieme, cop. 2009
ISBN:978-3-13-545006-3 LIBRIS-ID:11234528
Library search

Ross, Michael H.; Pawlina, Wojciech.
Histology : a text and atlas : with correlated cell and molecular biology

6. ed. : Philadelphia : Wolters Kluwer/Lippincott Williams & Wilkins Health, c2011
ISBN:9781451101508 (International ed.) LIBRIS-ID:12030789
Note! A new International edition (7th ed.) may be published during the fall.
Library search

Alberts, Bruce
Essential cell biology

4 ed. : - xxiii, 726, 58, 26, 28 pages
ISBN:9780815344551 (softback) LIBRIS-ID:14806619
Library search

Alberts, Bruce

Molecular biology of the cell

5. ed. : New York : Taylor & Francis, cop. 2008 - xxxiii, 1268 s.
ISBN:9780815341062 (paperback) LIBRIS-ID:10645719
URL: http://www.loc.gov/catdir/toc/ecip0710/2007005475.html
Library search

Alberts, Bruce

Essential cell biology

4 ed. : - xxiii, 726, 58, 26, 28 pages
ISBN:9780815344551 (softback) LIBRIS-ID:14806619
Library search

Mitchell, Barry; Sharma, Ram

Embryology

Britton, Robert

Edinburgh : Elsevier Churchill Livingstone, 2005 - vii, 81 s.
ISBN:0-443-07398-8 LIBRIS-ID:9503791
Library search

Ulfig, Norbert

Embryologi : en kortfattad lärobok

Wilhelms, Daniel B.

1. uppl. : Lund : Studentlitteratur, 2012 - 181 s.
ISBN:978-91-44-07115-2 LIBRIS-ID:12543000
Library search

Nordic Nutrition Recommendations 2004 : integrating nutrition and physical activity

4th edition : Copenhagen : Nordic Council of Ministers, Council of Ministers,c 2004 - 435, [1] s.
ISBN:92-893-1062-6 LIBRIS-ID:9851293
Library search