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

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| 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<br>• Department of Neuroscience<br>• Department of Cell and Molecular Biology |
| Decided by | Programnämnden för Läkarprogrammet |
| Decision date | 2007-03-13 |
| Revised by | Programnämnd 2 |
| Last revision | 2010-10-19 |
| Course syllabus valid from | Spring 2011 |

## Specific entry requirements

Standardised admission requirements E.1.

## Objectives

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 aims of scientific

development are integrated with the aims of the parts. Part 1: Development from egg to embryo Knowledge and understanding The system of man, in balance 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 (S2). 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). The system of man, in imbalance The student should be able to 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 human system, directly and indirect contact The student should be able to used concept maps to analyse, sensitise and learn complex connections around basic cell biology-related mechanisms such as around the different function systems of the body (M2). collect and analyse basic scientific as well as clinical issues and be able to summarise the result in writing (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 the chemical building blocks of the cell (S1-S2). 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 Indirect contact The student should be able to take capillary blood samples, be able to carry out oral glucose tolerance test and be able to analyse lactate, blood lipids and enzymes (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) including Centre for Family Medicine (CeFAM) 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. Part 1: Development - from eggs to embryo, 5.5 higher education credits (Development - from egg to embryo) 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. The initial sub-part comprises the circulation and respiratory organs, the urinary organs, the nervous system and the endocrine organs. Further, 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 and concept maps. In a scholarly project the student deepens oneself in the genetics mechanisms under the theme Hereditary and man in health and disease. 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. Part 2: Digestion and metabolism, 11 higher education credits (Digestion and Metabolism) The part treats in an integrated way  the structure and function of the digestive tract 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 in writing. The core also includes to be able to handle calculating programs, to analyse basic scientific articles and to analyse bases for e. g. diets and diet recommendations. Part 3  The Primary care including CeFAM, 1.5 higher education credits (Primary care) 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. Part 4 Integration with final examination, 6 higher education credits (Integration and exam) 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.

## Development - from egg to embryo, 5.5 hp

Grading scale: GU

### Digestion and metabolism, 11.0 hp

Grading scale: GU

### Primary care, 1.5 hp

Grading scale: GU

### Integration and exam, 6.0 hp

Grading scale: GU

## Teaching methods

Part 1: Development  from egg to embryo In the elements with systematic anatomy, the main working methods are lectures and group assignments. 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, through modelling and through the production of concept maps where important concepts are compared and related. The scientific project comprises information retrieval, self-study, discussions and to write an essay. 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 course also includes, laboratory sessions under supervision and demonstration of anatomical and histological preparations. Part 3: The primary care including CeFAM On CeFAM, 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. Teaching and presentations in English occur occasionally.

## Examination

Part 1: Development  from egg to embryo The part is examined both with self-evaluations, and with oral, written or IT-based tests. The scientific project work is examined individually with an essay. The concept maps are presented both orally and in writing and with a modelling. Part 2: Digestion and metabolism Overviews and lectures if safety has compulsory attendance such as all laboratory sessions. The part is examined by oral, written or IT-supported tests. The laboratory sessions are examined through group reports. Project works are examined in groups through oral presentations. Part 3: The primary care including CeFAM 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 is based on scientific publications. Compensation of absence from, and participation in, compulsory subparts: For tests, quiz, laboratory sessions, safety lectures, safety sessions, presentations of project work and for the teaching within the primary care apply compulsory attendance. Compensation of absence takes place according to the examiner's instructions, or when appropriate according to instructions from the supervisor within the primary care or the semester responsible regarding the primary care (CeFAM). Limitations of the number of examinations or practical training sessions 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

Course evaluation is carried out according to guidelines that are established by the board of education. Examination 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 Student that has failed one placement (VFU)/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.

# Literature and other teaching aids

*Harvey, Richard A.; Ferrier, Denise R.*

**Lippincott's illustrated reviews : Biochemistry**

5th ed. : Philadelphia : Wolters Kluwer Health/Lippincott Williams & Wilkins, c2011 - 520 p.
ISBN:978-1-60831-412-6 (alk. paper)  LIBRIS-ID:11908006
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*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
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*Berg, Jeremy Mark; Tymoczko, John L.; Stryer, Lubert*

**Biochemistry**

6. ed. : New York, N.Y. : Freeman, cop. 2007 - xxxv, 1026, [86] s.
ISBN:0-7167-8724-5 (inb.)  LIBRIS-ID:10124283
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*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
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*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
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**Laurells Klinisk kemi i praktisk medicin**
*Nilsson-Ehle, Peter; Ganrot, Per Olof; Laurell, Carl-Bertil*

8., [rev. och utök.] uppl. /b Peter Nilsson-Ehle (red.) ; redaktionskommitté: Per Olof Ganrot ... : Lund : Studentlitteratur, 2003 - 723 s.
ISBN:91-44-00766-3 (inb.) LIBRIS-ID:9153885
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**Lehninger principles of biochemistry**

5th ed. : New York : W. H. Freeman ;a Basingstoke :b Palgrave [distributor], cop. 2008. - 1158 s.
ISBN:978-0-7167-7108-1 LIBRIS-ID:10718150
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*Feneis, Heinz; Dauber, Wolfgang*
**Anatomisk bildordbok**
*Spitzer, Gerhard; Brinkman, Ingrid*

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

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**Essential clinical anatomy**

3., [rev.] ed. : Philadelphia : Lippincott Williams & Wilkins, cop. 2007 - xx, 692 s.
ISBN:0-7817-6274-X LIBRIS-ID:10155388
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*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.
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*Boron, Walter F.*
**Medical physiology : a cellular and molecular approach**
*Boulpaep, Emile L.*

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**Textbook of medical physiology**

11. ed. [rev.] : Philadelphia : Elsevier Saunders, cop. 2006 - xxxv, 1116 s.
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*Despopoulos, Agamemnon; Silbernagl, Stefan*
**Color atlas of physiology**

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ISBN:3-13-545005-8 (Stuttgart) LIBRIS-ID:8865758
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5. ed. : Philadelphia, Pa. : Lippincott Williams & Wilkins, cop. 2006 - 906 s.
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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
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**Embryology**
*Britton, Robert*

Edinburgh : Elsevier Churchill Livingstone, 2005 - vii, 81 s.
ISBN:0-443-07398-8 LIBRIS-ID:9503791
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**Nordic Nutrition Recommendations 2004 : integrating nutrition and physical activity**

4th edition : Copenhagen : Nordic Council of Ministers, Council of Ministers,c 2004 - 435, [1] s.
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