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:
Autumn2016 , Autumn2017 , Spring2019 , Autumn2019 , Spring2020 , Autumn2020 , Spring2021

Course code	2LK130
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	Programme Committee 2
Decision date	2016-05-03
Course syllabus valid from	Autumn 2016

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

Learning Outcomes The course aims to provide the student with fundamental knowledge in biochemistry and cell biology as required for the medical profession. This entails a solid understanding of the structure and function of cells in the body, in line with current knowledge of healthy human developmental biology, digestion and metabolism.

Knowledge and understanding The student shall be able to
• describe the structure and function of biomolecules, organ systems, the structure of tissues and cells at different levels; their most important functions, cell proliferation and differentiation, cell motility, and also be able to explain and discuss how interactions between cells enable the development of a

multicellular organism (organ system (S2), remaining parts (S3)).
• describe the organization and development of the genetic material on cellular-, chromosomal- and individual gene levels (S2); be able to discuss basic molecular genetic mechanisms in the development of an individual from formation of germ cells to the embryo, as well as discuss the relationship between heredity and environment on the phenotype of genetic diseases (S3).
• describe cellular communication and membrane transport, the structure and function of the digestive tract, metabolism of the body and the importance of nutrients, and be able to relate this knowledge to how different nutrients are absorbed and metabolized, and how deficiencies can yield different symptoms and diseases (S3).

Skills The student shall be able to
• use models and laboratory methods to analyze, demonstrate and learn complex relationships in basic cell biology related mechanisms, metabolism and different functions of the body; collect and analyze information in both basic science and clinical topics; work in mixed groups as well as individually and be able to present the results together with the team (M2).
• identify and name anatomic or histological structures from images (M2).
• apply professional secrecy, as well as identify and describe respective part in a patient-centered consultation. (PV)
• adequately use basic medical examination instruments (M1). (PV)

Attitude The student shall be able to
• demonstrate an understanding of how the human phenotype is the result of interplays between heritable traits and development in a complex and varying environment (S1).
• through an analytical and scientific approach demonstrate an understanding of the etiology of diseases (S3).
• show respect for the dead body, act respectfully against patients, other students, teachers and staff, and take responsibility for her/his own learning and professional development (S3). (PV)

Content

The course is divided into four modules: Module 1: Basic Structure and Development - from Egg to Embryo 6.5 credits Module 2: Digestion and Metabolism 10.0 credits Module 3: Primary care 1.5 credits Module 4: Integration with Final Examination 6.0 credits

Basic Structure and Development - from Egg to Embryo, 6.5 hp During the initial part of the module, an introduction is given to the structure and function of the adult human as well as to the terminology of anatomy. The organ systems in focus include the circulatory and respiratory organs, urinary organs, the nervous system, and endocrine organs. During the initial part of the module, an introduction is also given to the structure and function of molecules, as well as to chemical nomenclature.

Subsequently follows the core of the module, which includes the scientific disciplines of cell- and molecular biology as well as developmental biology that relate to reproduction, movement and skin, as well as development and aging. This component, which is based on human development from germ cells to embryo, gives an introduction to the most important functions and structures of the cell, embryology, as well as to molecular mechanisms of developmental biology. Basic functions are discussed on molecular and cellular level, with special focus on the mechanisms that facilitate development of a multicellular organism, i.e. growth, heredity, interactions between cells, cell motility, cell transport as well as cellular differentiation. **Digestion and Metabolism, 10 hp** This module focuses on digestion, metabolism and the endocrine system. An important part consists of nutritional physiology and connection to common diseases. The link between symptoms and pathology is discussed and illustrated with the so-called "metabolic syndrome". Relations are discussed also to disturbances in the digestive tract and associated organs, atherosclerosis and diabetes, as well as inborn metabolic disorders.

The core of the module is based upon the scientific disciplines of macroscopic and microscopic

anatomy, medical biochemistry, physiology and endocrinology. The module covers the structure and function of the digestive tract and its accessory organs on molecular-, subcellular-, cellular-, tissue- and organ levels, as well as how these levels are integrated. It also covers the organization and regulation of the chemical life processes, as well as the structure and function of molecules and cells. **Primary care, 1.5 hp** During this module the student is introduced to clinical examination and consultation skills (including patient-centered communication methodologies). The student is trained in teamwork, as well as in the importance of following hygiene instructions and patient regulatory frameworks, for example with respect to professional secrecy. The student is also trained in how to interact with patients, relatives and staff in a respectful manner.
Integration with final examination, 6 hp The final module of the course focuses on the skill of integrating, relating, applying and deepening the knowledge acquired from modules 1 and 2.

Teaching methods

During the initial part of module 1, Basic Structure and Development- from Egg to Embryo, the main teaching methods include lectures, group assignments and seminars, as well as individual reading, reflections and studies. The module on molecular and cellular basic mechanisms of life as well as on developmental biology, comprises both basic science and clinical lectures complemented with seminars. The Project Work (so-called "*cellslöjd*"/"cell craft") involves constructions of models that compare and illustrate important concepts.

The module Digestion and Metabolism includes basic science and clinical lectures, seminars, project works and individual studies. In this module, analysis of basic science literature is also included. The knowledge is applied and deepened via participation of clinically active teachers and via meetings with patients. Further, experimental laboratory sessions under supervision are included, as well as demonstrations of anatomic and histological preparations.

The module Primary Care includes lectures, practical training, group discussions, case-based teaching, and clinical placement teaching ("VFU, *verksamhetsförlagd undervisning*"). During the VFU, teaching is conducted through group tuition, shadowing a physician, training in patient-centered communication methodologies, clinical examination under supervision, conversations at home visits to patients, as well as visits to a clinical analysis laboratory.

The module Integration with Final Examination covers summarizing lectures, question times, self-studies and reflection, subsequently completed with final examination.

Examination

Module 1: Basic Structure and Development- from Egg to Embryo Compulsory parts: Participation in the Project Work "*cellslöjd*"/"cell craft" is compulsory as it contributes to learning in a manner difficult to achieve in other ways, and offers training in team work. This Project Work is completed with a guided exhibition around a medical theme, where the models are presented and the activities are formatively examined. Examination: An IT-based self-evaluation (for personal reflection), a written examination, and two IT-based examinations (tests with a random selection of questions based on the intended learning outcomes). Oral re-examination may take place if a student fails the written test.

Module 2: Digestion and Metabolism Compulsory parts: Participation in the safety lecture as well as in the guided tour of the course laboratory are compulsory parts, as these are preconditions for being able to carry out the practical parts of the laboratory sessions in a safe manner, and are assessed through a questionnaire on individual basis. Active participation in the laboratory sessions is also a precondition to pass the practical parts. Examination: A written examination, two IT-based examinations (tests with a random selection of questions based on the intended learning outcomes). If a student fails, an oral re-examination may take place. Project work and laboratory sessions are examined individually in conjunction with oral presentations in groups.

Module 3: Primary care Compulsory parts: Clinical placement (VFU), field work (patient interview with home visits) as well as the practical training are compulsory as the activities are formatively examined.

Module 4: Integration with final examination Examination: Integrated written examination, which is on a higher average SOLO-level than the earlier modules. Passed written and IT-based examinations during modules 1 and 2 are required for participation in the written examination.

The examiner assesses if, and how, absence from compulsory parts can be compensated. Absence from a compulsory course element could mean that the student can not retake the element until the next time the course is offered.

Limitation of number of tests or practical training sessions Students who do not pass a regular examination are entitled to re-sit the examination on five more occasions. If the student has failed six examinations/tests, no additional examination is given. Submission of a blank exam paper is regarded as an examination. For clinical placement elements, the rule is that they can only be repeated once.

Interruption of clinical placement (VFU) The examiner may, with immediate effect, interrupt a student's clinical placement (or equivalent) if the student demonstrates such serious deficiencies in knowledge, skills or attitude that patient safety or patient confidence in healthcare is at risk. If a clinical placement is interrupted in this way the student is deemed to have failed that element and to have used up one clinical placement opportunity.

In such cases, an individual action plan should be set up stating which activities and tests are required before the student is qualified for a new clinical placement on the course.

Entry requirements to new clinical placement (VFU) opportunity A student who has failed a clinical placement (or equivalent) due to such serious deficiencies in knowledge, skills or attitude that patient safety or patient confidence in healthcare is at risk, is qualified to new clinical placement only when the individual action plan has been completed.

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 will be 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 may 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

Biochemistry

Berg, Jeremy M.; Tymoczko, John L.; Gatto, Gregory J.; Stryer, Lubert

8. ed. : New York, NY : Freeman, 2015 - xxxii, 1056 , 134 p.
ISBN:9781464126109 LIBRIS-ID:17838999
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

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

Gilroy, Anne M.
Anatomy : an essential textbook, latin nomenclature

2015
ISBN:9781626231177 LIBRIS-ID:17841368
Library search

Atlas of anatomy : Latin nomenclature
Gilroy, Anne M.; MacPherson, Brian R.; Ross, Lawrence M.; Schünke, Michael; Schulte, Erik; Schumacher, Udo

2nd ed. : New York : Thieme, 2013 - 694 p.
ISBN:9781604067477 (hardcover : alk. paper) LIBRIS-ID:14805917
Library search

Netter, Frank H.
Atlas of Human Anatomy

Sixth Edition : Philadelphia : Saunders/Elsevier, c2014 - 1 volume (various pagings)
ISBN:9781455704187 (hbk.) LIBRIS-ID:16454748
Library search

Sobotta atlas of human anatomy : musculoskelatal system, internal organs, head, neck, neuroanatomy
Sobotta, Johannes; Paulsen, Friedrich; Waschke, Jens; Klonisch, Thomas; Hombach-Klonisch, S.

15th ed., English version with Latin nomenclature : München : Elsevier/Urban & Fischer, 2011. - 3 dl.
ISBN:9780723437314 (set) LIBRIS-ID:17852490
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

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

Seventh edition. : Philadelphia : Wolters Kluwer Health, [2015], 2016 - xv, 984 pages
ISBN:9781451187427 LIBRIS-ID:17630334
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

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ISBN:9780815344551 (softback) LIBRIS-ID:14806619
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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
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