

Approved by the Board of the Faculty of Health Sciences, 7 March, 2007. Valid from 1 July, 2007

## Syllabus for Medical Programme, 330 ECTS credits

### Scope and level

The Medical Programme consists of 330 ECTS credits and leads to Degree of Master of Science in Medicine (in Swedish: Läkarexamen). The National Board of Health and Welfare issues a medical license after completed general internship.

The study programme is at an advanced level.

### Objectives

#### General objectives for higher studies

The Swedish Higher Education Act (chapter 1, §8) stipulates that the basic university education shall be based principally on the knowledge the students acquire in national or specially designed programmes at upper secondary school or on equivalent knowledge. The Government may, however, grant exemptions in the case of artistic educational programmes.

Basic university education should develop the students'

- ability to think critically and make independent judgements
- ability to independently identify, formulate, and solve problems, and
- preparedness to meet changes in professional life

Beyond theoretical and practical knowledge within the relevant field, the student shall develop the ability to

- seek and evaluate information at a scientific level
- follow the development of knowledge, and
- exchange information with others, including those without backgrounds in the given field

The Swedish Higher Education Act (chapter 1, §9) stipulates that advanced university education shall be based principally on the knowledge the students acquire in basic university education or on equivalent knowledge. Advanced university education shall further develop the students' knowledge, skills and abilities acquired at the basic university education level and, additionally,

- further develop the students' ability to independently integrate and utilise knowledge
- develop the students' ability to handle complex phenomena, issues and situations, and
- ensure that the students gain the knowledge and skills fundamental to professional activity, which makes great demands on independence, or to research and development (Law 2006:173)

#### National objectives of the Degree of Master of Science in Medicine

The Higher Education Ordinance (Degree Ordinance) stipulates that to be awarded a Degree of Master of Science in Medicine, the student shall have gained knowledge and skills fundamental to

the medical profession and necessary to complete the general internship (allmäntjänstgöring or AT), which is required in order to become a licensed physician. The objectives are:

### **Knowledge and Understanding**

To be granted a Degree of Master of Science in Medicine, the student shall be able to

- exhibit knowledge of the scientific basis of the field and understanding of current research and development work and as well knowledge about connections between science and experienced practice and its relevance for professional work
- exhibit breadth as well as in-depth knowledge in the medical field including knowledge about and understanding of conditions in society influencing the health of different groups and individuals, children as well as men and women
- exhibit knowledge about economy and organisation structures of importance for health care
- exhibit knowledge about relevant statutes

### **Skills and Abilities**

To be granted a Degree of Master of Science in Medicine, the student shall be able to

- exhibit a well developed ability to independently diagnose the most common illnesses in patients and, in cooperation with the patient, treat these illnesses
- exhibit an ability to initiate and implement health-promoting and preventive work in health care for both individual patients and groups of patients
- exhibit an ability to critically and systematically integrate and utilise knowledge as well as analyse and assess complex phenomena, issues and situations
- exhibit a well developed ability to inform and teach different groups and carry out supervisory tasks
- exhibit an ability to work in a team and cooperate with other professionals both in health and medical care and in nursing care
- exhibit an ability to report, both verbally and in writing, on measures and treatment results to the parties involved and, in accordance with relevant statutes, document these reports
- exhibit an ability to discuss, based on scientific ground, new facts, phenomena and issues in the medical field with different target groups and to critically examine, assess and utilise relevant information, and
- exhibit an ability to initiate, participate in and implement quality improvement work and evaluate medical treatment results

### **Evaluation Ability and Professional Attitudes**

To be granted a Degree of Master of Science in Medicine, the student shall be able to

- exhibit self-awareness and ability to empathize
- exhibit a holistic view of the patient based on a scientific and humanistic perspective while paying special attention to human rights
- exhibit an ethical and professional approach established in health and medical care, and
- exhibit an ability to identify own need of additional knowledge and to continuously develop own competence

## **Local objectives**

In addition, the following objectives apply for the education programmes at the Faculty of Health Sciences in Linköping. The student shall

- have gained inter-professional competence in order to promote, among other things, her employability
- with problem-based learning as a pedagogical tool, be able to define problems, search for and evaluate knowledge in order to be able to solve problems that arise in the future practice of her profession
- have gained a gender awareness that is manifested in the future practice of her profession, and
- have gained knowledge and understanding of other countries and cultures as well as of international circumstances from a health perspective in order to promote quality and international mobility

To be granted a Degree of Master of Science in Medicine the student shall have

- developed a scientific approach with the ability to participate in research and development

## **Independent scientific project**

To be granted a Degree of Master of Science in Medicine the student shall have completed an independent scientific project, within the framework of the course requirements, at an advanced level (30 ECTS credits).

## **Basic pedagogical philosophy**

Problem-based learning (PBL) as a pedagogical philosophy and method is applied in the medical programme. In PBL, the focus is on the student's participation in learning. The student takes responsibility, in theoretical and practical studies, for judging what he/she needs to learn by analysing and handling situations connected to the medical profession. The student searches for knowledge, sifts, applies and assesses this knowledge and evaluates his/her own learning.

The teaching is designed to stimulate and support the student's development of professional competence and independence in learning. Situations linked to the medical profession are used as a basis for processing problems and creating motivation and meaningfulness in the studies. Students work together in small groups, partly to practise cooperation and partly to contribute to each other's learning. The teacher applies PBL, partly as a facilitator by challenging and following the students' learning and providing feedback, and partly by contributing knowledge in a way that stimulates and complements the students' learning.

## **Main subject area**

Medicine

## **Profession**

Physician. The professional role of physician is broad and can lead to work as a physician in a variety of specialised fields, as well as in public health, research, teaching, management functions, etc.

## **Contents and structure of the programme**

### **Scope**

The medical programme comprises 11 terms of full-time studies, a total of 330 ECTS credits.

## **Courses**

The programme contains the following three courses:

Phase I Health and Biological function (terms 1-2), 90 ECTS credits

Phase II Health and Disease (terms 3-5), 60 ECTS credits

Phase III Patient and Prevention (terms 6-11), 180 ECTS credits

The following course is at an advanced level:

Phase III Patient and Prevention (terms 6-11), 180 ECTS credits

## **Structure**

The medical programme aims to develop all aspects of the students' personality and professionalism and to prepare them for their future professional role. The objectives of the three phases/courses in the programme are divided into four areas: Science and Learning, Professional Attitudes, Medical Science and Clinic, and Community and Population Health. Emphasis is placed on solving common and important medical problems with a multi-dimensional perspective in cooperation with other healthcare employees. The focus is on understanding concepts and principles within medicine and related disciplines. The students shall also develop a scientific perspective and the ability to continue learning after the completion of their university education.

The contents of the medical programme are divided systematically into seven multidisciplinary themes according to organ system, or subject matter when the former is not applicable. These themes are:

- Life cycle-Endocrine-Reproduction-Neoplasia
- Gastroenterology-Nutrition-Metabolism
- Circulation-Respiration-Kidney-Erythrocyte
- Immune system-Dermatology-Infectious diseases
- Neurology-Sense organs-Psychiatry-Locomotion
- Disease mechanisms-Diagnostics-Treatment
- Professional attitudes-Public health (including scientific and professional development and inter-professional training)

These themes are represented in the three phases and both set boundaries for and establish progress in the level of difficulty of the studies, see the overview of the programme in Appendix 1. Some themes contain 'strands', which are present throughout the programme.

The academic level in the principal subject area medicine is achieved through the progress within the themes, as mentioned above.

## **Syllabi**

A course covers one phase and consists of sub-courses, most often with duration of one semester. For each course there is a syllabus. The general objectives for a phase, called phase objectives, are the same for all sub-courses in the course. Brief information on the three courses is given below. See also syllabi.

### **Phase I, Health and biological function**

Phase I covers terms 1-2. The first part of the first term consists of the course Health, Ethics, and Learning (HEL I), an integrated course for all of the programmes at the Faculty of Health Sciences. The subjects of health, ethics and learning are studied from the vantage point of the student's own experiences and ideas as compared with scientifically supported theories. At the same time, PBL is

introduced and practised. The remainder of the first semester consists of sub-course Term 1:B, which, like sub-course Term 2, focuses on central medical concepts of the normal functions of the body and the maintenance of health and balance. 'The Strand' in patient communication is introduced during Term 1:B.

## **Phase II, Health and Disease**

Phase II covers terms 3-5. In this phase, studies of the body's normal functions are continued and further developed by studying causes and mechanisms behind the development of disease. Additionally, this phase includes study of methods by which diseases may be diagnosed, how a patient examination is carried out and documented and principles for how diseases may be prevented and treated. This strand continues during sub-courses Term 3 and Term 4. Preparations for the independent scientific project undertaken during sub-course Term 6 (Phase III) are made during sub-course Term 5.

## **Phase III, Patient and prevention**

Phase III begins with sub-course Term 6, during which the students work on their independent projects (30 ECTS credits). It is also possible for medical students to substitute this sub-course with a single subject course (30ECTS credits) related to the "Master programme in medical bioscience" at Linköping University.

During terms 7-11, studies consist predominantly of clinical rotations at primary care units and in hospital clinics. The recurring rotations in primary care aim to give the student an understanding of the entire disease panorama with an emphasis on common medical problems. The students gain knowledge of in-patient and out-patient hospital care by means of rotations at both highly specialized hospitals as well as at county and general hospitals. Clinical rotations can take place at hospitals throughout the Southeast health care area, comprising three counties, as well as in the county of Örebro. During parts of the clinical rotations, it is possible to select an elective rotation among various specialties.

The sub-courses Terms 7-11 each consist of 20 weeks. The first 18 weeks are made up of three two-week periods of theoretical studies (theme weeks) interspersed among three four-week periods of clinical rotations. Two weeks are allocated for independent studies and the final examination. An important principle is that the student has relatively long and uninterrupted rotations to enable her to become a member of a care team as well as providing good feedback.

During the clinical rotations, the student works predominantly with specific patient-related problems and independently develops her theoretical knowledge and skills. During each four-week rotation, the students attending the same or a closely located clinic/hospital meet weekly in a so-called clinical base group to study common clinical symptoms or problems according to PBL guided by a list of headings that are intended to complement other activities during the sub-course. Students may also participate in a clinical base group online. During two of the three 4-week rotations, the student carries out a written field-study assignment, which she also presents orally. The focus of one field-study assignment per term should be on evidence-based medicine.

During the theme weeks, the same base group for that term meets twice a week. Web-based scenarios most often consist of patient cases, which constitute the starting point for a focus on relevant theoretical areas such as basic science and pathophysiology. The students also further develop their theoretical knowledge in relation to problems in e.g. ethics, public health and prevention.

## **Principles for objectives**

Objectives have been formulated based on the overall national objectives for the university and **those for** the medical programme. The objectives for each phase describe the knowledge and skills that the student is expected to gain during the three phases of the programme (see phase syllabi and sub-courses included). The contents of the programme's objectives partially overlap. For each sub-course, the objectives of the phase should be reflected in the objectives of the term,

which decide the contents to be covered. The phase objectives and the objectives for sub-courses must therefore be used together.

The objectives of the programme are met by combining practical and theoretical studies. The student is expected to apply theoretical reasoning to explain the principles behind clinical practice.

## **Learning resources**

Learning is an active process, which requires independent work. In order to provide the student with time for independent study, all scheduled activities during Phases I and II and during the theme weeks in Phase III should not exceed 15 hours per week. Analogously, the extent of clinical rotations during phase III should be approximately 30 hours per week.

The central forum for learning in PBL is the base group. The base group is also the hub of the studies during Phase I and II. Starting from a Web-based scenario, usually a patient case, the group makes an inventory of its existing knowledge, formulates questions concerning the scenario and identifies its learning needs. This results in traditional subjects being integrated in an interdisciplinary whole, which together illuminate the case in question.

As a complement to base group work and practical clinical rotations, the programme aims to provide a variation of learning forums. Lectures are offered to provide overviews on certain subjects or to illuminate difficult or rapidly developing areas. Additional learning forums include seminars, physical examination skills sessions, laboratories, literature studies, examination of articles, assignments, field studies, etc. Patient-related activities and extended rotations in primary care and hospital clinics are also established forums for learning. Patient contact and communication are practised during the first four terms as part of the theme "Patient contact, holistic view, and the communication skills", also called 'the Strand' (in Swedish: 'Strimman'). During Phase III, the Strand is further developed.

A scientific attitude is also introduced from the first term and is incorporated into the programme in its entirety. An independent scientific project is chosen by the student first during the sub-course Term 5, when a knowledge base has been established, and is carried out during the sub-course Term 6, the first Term of Phase III.

## **Integration of the Health Science programmes**

Integration of the programmes is an important part of the educational model at the Faculty of Health Sciences. The sub-course entitled "Health, Ethics, and Learning I" (HEL I) during the first term is followed-up by a two-week period (HEL II) in the sub-course Term 5. In addition, students from various health care specialties develop their individual professional roles and practise their teamwork at the teaching ward during Phase III. Students also collaborate during shared clinical rotations.

## **International exchange**

The medical programme participates in international student exchanges within Europe and in other parts of the world. Opportunities to complete parts of the medical education abroad are available to Linköping students. Students from other countries also attend the Faculty of Health Sciences, which means that some parts of the programme, e.g. lectures, base group meetings, and entire semesters, may be held in English.

## **Examination**

### **Principles for examinations**

The intention is to test knowledge, skills and attitudes in accordance with the objectives for the phases and sub-courses. The tests should stimulate study in accordance with the principles for learning described above. This is done by using a variety of test forms in different combinations,

where skills as well as understanding and critical evaluation of factual knowledge can be tested. Tests may be oral or written and include practical elements. Tests may be held in English.

Compulsory coursework includes completion of written assignments and active participation in activities such as base groups, seminars, the Strand “Patient contact, holistic view, and communication skills”, clinical rotations, other patient-related activities, skills training and integration activities with other programmes at the Faculty of Health Sciences. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Compulsory coursework is assessed on an ongoing basis during the sub-courses.

Examinations are conducted at the end of each sub-course and phase. The focus of the examinations is on the material covered during the respective sub-course or phase, but can also include previous material important for the understanding of the given problems. The examinations serve to give the student as well as the course coordinators feedback and determine whether the student has acquired satisfactory knowledge and skills during the respective sub-course or phase. Information regarding the form of the examinations is provided in the syllabi.

### **Sub-course examination**

Each sub-course is completed with an evaluation of compulsory coursework and a final examination. When both of these requirements are met, the student then receives a passing grade for the sub-course.

Compulsory coursework in each sub-course is specified in the respective course material. See specific rules for Term 6 below.

Grades on the compulsory coursework are presented to the student two weeks prior to the first part of the final examination. Additional work required to compensate for missed compulsory activities is decided upon by the course examiner, who informs the student counsellor of his or her decision

The final examination held at the end of each sub-course determines how well the student has achieved the objectives for the sub-course. The final examination usually consists of a written exam, which may be combined with an oral and/or practical exam. Information regarding the examination form is provided in the course material distributed at the beginning of each sub-course. For those sub-courses with both a written and an oral exam, the results are combined to obtain a final grade. During Term 1, a final examination is also given after the HEL I course. Students may only take examinations if they have completed the larger part of the compulsory coursework during a sub-course.

### **Course/Phase examinations – pass requirements**

Phase examinations are conducted upon the completion of each phase. A passing grade in the phase examinations is conditional on the student having a passing grade in the sub-courses in the given phase. The Phase II examination includes material from Phase I, and the Phase III examination includes material from all three phases. These examinations consist of several parts, see phase syllabi for details. These syllabi also specify the requirements the student must satisfy to be permitted to take the different parts of a phase examination.

### **Re-examinations**

If a student has failed the combined written and oral final examination for a sub-course/course, both must be retaken. Practical exams may be retaken separately if the student receives a failing grade.

If a student has failed the final examination, she has the right to retake the exam either at the next scheduled final examination at the end of the term or at a re-examination. Re-examination takes place during the third or fourth week of the spring term and before or during the first week of the autumn term.

If a phase examination results in a failing grade, the different sections may be retaken separately.

## **Number of examinations**

The following applies in the case of courses with a limited number of examination opportunities: Resource-heavy examinations, e.g. oral and practical, often patient-related, examinations, are held on no more than five occasions. This means that a student who has failed the first examination may take it a further four times. In the case of other examination forms, the student has the right to retake an examination an unlimited number of times. The date of the re-examination is announced at the beginning of each sub-course. If the student fails the examination twice, she has the right to ask for support by the student councillor.

## **Changing examiner**

A student who fails a course or sub-course twice normally has the right to ask for a different written and/or oral examiner.

## **Attending sub-courses**

A student may not attend the same sub-course more than twice.

## **Clinical rotations**

A student who fails a clinical rotation may attend this part a second time. The date of the re-examination is set on a case-by-case basis and is subject to the availability of a teacher and a supervisor.

## **Scope of re-examination and new assessment of clinical practice**

The scope of both the re-examination and the new assessment of clinical practice shall be the same as the scope of the ordinary examination.

## **Supporting and dissuading students**

The students' development during their studies is followed continuously so that a student can be given help if he/she gets into difficulties. The student shall be given the opportunity to discuss, together with a student counsellor, measures that can help the student to successfully complete the programme. If there is doubt as to a student's ability to successfully complete the programme, including whether he or she is suited to work as a physician, the teacher and/or supervisor involved shall initiate an investigation via the director of studies. This investigation should be made as early as possible in the programme by the medical programme committee in consultation with the programme's student welfare group, the teachers involved and the student. If the conclusion reached in this assessment is that the student should be advised to not continue his or her studies, the student shall be given the opportunity to discuss alternative educational programmes together with a student counsellor.

## **Application for examination**

Prior to each sub-course, information is given on how to apply for examinations given during or in connection with the sub-course. In other respects, the "Regulations concerning examinations and examiners", according to a decision by Linköping University (LiU 1109/00-40), are applied.

## **Grades**

Grades are given at the end of each sub-course/course and are based on an assessment of all the learning objectives stated in the curriculum in question. The grading scale is pass or fail.

## **Quality assurance**

The medical school is constantly working to assure the quality of the programme. This means that the programme's content and structure as well as examinations can be modified during the

course of the programme. Information about changes is given to those involved by no later than the beginning of sub-courses.

## **Diploma and degree titles**

Students who have completed the programme with pass grades in all the courses are awarded a Degree of Master of Science in Medicine (in Swedish: Läkarexamen).

## **Eligibility regulations**

### **General admission requirements**

To be eligible for admission to the medical programme, a student must satisfy the conditions for basic eligibility stated in the Swedish Higher Education Act (chapter 1, §§ 4 and 7) and have the attainments corresponding to the standardised admission requirements (E. 1) laid down by the Swedish National Agency for Higher Education. The minimum requirement is always a pass grade in subjects in the national programmes at upper secondary school.

### **Specific admission requirements**

In addition to the general admission requirements, there are specific admission requirements: A pass grade in Mathematics D, Physics B, Chemistry B and Biology B.

### **Threshold rules**

The contents of the different terms are based on each other and must be studied in order. The following general threshold rules apply for eligibility to proceed in the programme: In order to study the next sub-course, the student must have a passing grade on the term before the preceding one as well as a passing grade on the compulsory coursework in the preceding sub-course.

Students who do not satisfy the requirements in the threshold rules may apply for an exemption from the director of studies.

## **Transitional regulations and other regulations**

### **Administrative regulations for studies**

For regulations regarding temporary postponement of studies, interruption of studies, returning to studies, credits for previous studies and/or work, see Linköping University's rules and regulations (RS H7:06) and the "Administrative regulations for studies for the Faculty of Health Sciences' programmes".

### **Transitional regulations between syllabi**

This syllabus applies from the autumn term of 2007. Students admitted to the programme before 01-07-2007 may, until 30-06-2014, to complete sub-course Term 6 in accordance with the previous syllabus applying from 01-06-2004. Individual study plans and examination forms for those who resume studies according to the new syllabus must be approved by the director of studies.

Re-examination in accordance with the previous syllabus may take place during the first two terms following the introduction of the new syllabus in accordance with local regulations established by the Board of the Faculty of Health Sciences.

### **Other**

Students who do not intend to complete the whole medical programme may conclude their studies after sub-course Term 6 with a Bachelor of Medicine degree. In such cases, the student may be given an individual study plan for sub-course Term 6.

w 1	w 2	w 3	w 4	w 5	w 6	w 7	w 8	w 9	w 10	w 11	w 12	w 13	w 14	w 15	w 16	w 17	w 18	w 19	w 20
<b>Phase I</b>																			
<b>Term 1</b>																			
HEL I								Endokrine-Reproduction-Live cykel-Neoplasia						Gastroenterology- Nutrition-Metabolism				Exami- nation	
<b>Term 2</b>																			
Prof.attit.- Popul. health		Circulation-Respiration-Kidney- Red blood cell						Immune-Dermatology- Infektiuous diseases				Neurology-Senses- Psychatri-Locomotion				Exami- nation			
<b>Phase II</b>																			
<b>Term 3</b>																			
Disease mechanisms- Diagnostics-Treatment						Circulation- Respiration- Kidney-Red c.		Prof.attit.- Popul. Health		Circulation-Respiration-Kidney-Red blood cell						Exami- nation			
<b>Term 4</b>																			
Gastroenterology- Nutrition-Metabolism				Endokrine-Reproduction-Live cykel-Neoplasia				Prof.attit.- Popul. Health				Immune- Dermatology- Infektiuous diseases				Exami- nation			
<b>Term 5</b>																			
HEL II		Neurology-Senses-Psychatri-Locomotion								P&P		Disease Mecha- nisms-Diagnostics- Treatment				Examination			
<b>Phase III</b>																			
<b>Term 6</b>																			
Student research project and electives																			
<b>Term 7</b>																			
Neuro- Senses...		Primary- Care		Derma- tology		Immune- Dermat.- Infect.		Oftalmology Ear- nose-throat				Prof.attit.- Popul. Health		Infectious diseases				Exami- nation	
<b>Term 8</b>																			
Surgery Outpat. Clininics		Primary- Care		Cirul- Resp- Kidney...		Internal medicine				Gastro- Nutr.- Metab		Surgery				Prof.attit.- Popul. Health		Exami- nation	
<b>Term 9</b>																			
Student Ward		Primary- Care		Neuro- Locomotion....		Elective Internal Medicine				Prof.attit.- Popul. Health		Ortopedics Rheumatology				Cirul- Resp- Kidney...		Exami- nation	
<b>Term 10</b>																			
Neuro- Psych...		Primary- Care		The Strand Elective		Prof.attit.- Popul. Health		Psychatri				Endo.- Life Cyc. Neoplac..		Neurology, Geriatrics Rehabilitation				Exami- nation	
<b>Term 11</b>																			
Endo.- Reprod.- Life Cyc..		Gynecology and Obstetrics				Immun- hud- infektion		Pediatrics				Prof.attit.- Popul. Health		Emergencies				Exami- nation	
w 1	w 2	w 3	w 4	w 5	w 6	w 7	w 8	w 9	w 10	w 11	w 12	w 13	w 14	w 15	w 16	w 17	w 18	w 19	w 20
Rotating Clinical clerchships during Phase III																			
															Version 2006-10-10				

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## **Syllabus Phase I – Degree of Master of Science in Medicine**

### **Health and Biological function, 60 ECTS credits**

Course category: part of the Medical Programme.

#### **General**

This syllabus is based on the Medical Programme Syllabus in which important principles for the implementation of the programme are described. This information is repeated only in part in the syllabus. See also Appendix 1 of the Syllabus, which provides an overview of the contents of the programme's terms.

#### **Principles for and structure of objectives for Phase I**

The objectives are based on the competences described in the general objectives for higher education and in the national objectives for medical education in the areas Knowledge and Understanding, Skills and Abilities and Evaluation Ability and Professional Attitudes

The phase objectives describe the direction and level of competences the student must achieve during the phase. They are divided into four domains: Science and Learning, Professional Attitudes, Medical Science and Clinic, and Community and Population Health. These domains are also present in the sub-course objectives, which cover both theoretical knowledge and practical skills.

The phase and sub-course objectives should be viewed in relation to the problems and situations presented in the scenarios for base group work and in other ways. Furthermore, the programme's objectives should be achieved in an interplay between theory and practice. The student should always be able to justify practical skills with theoretical standpoints. Similar objectives may reappear during later terms, but with higher requirements. Objectives from an earlier term can also be the subject of examination in a later term.

#### **Objectives – Phase I**

##### **Science and Learning**

The student shall be able to:

- actively participate in and constructively evaluate the base group's work in order to achieve a productive work environment
- identify and reflect on mechanisms and necessary prerequisites for meaningful learning
- identify and reflect on independent strategies for learning
- use different information sources and justify their use
- seek medical information and discuss the structure of scientific publications
- identify the structure of a scientific study and apply basic statistical methods

##### **Professional Attitudes**

The student shall be able to:

- identify and reflect upon her own and others' attitudes towards and views of mankind and their consequences in the workings of the health care system
- communicate with the intention of understanding the patient's problems and living situation
- identify and reflect upon her own and the patient's reactions during consultation and physical examination
- show consideration and empathy towards patients and their relatives
- identify general ethical principles and ethical codes for the medical profession
- identify ethical dilemmas in health care
- identify and reflect upon her own and other health care professionals' areas of competence

### **Medical science and clinic**

The student shall be able to:

- describe and explain the importance of normal structure and function at the molecular, cell, tissue, organ and organ system levels for maintaining health
- describe mechanisms that work to maintain balance, homeostasis, in a healthy human body in the presence of external factors
- explain mechanisms that lead to changes in the body related and to different phases of the life cycle and to gender
- identify the significance of human biological mechanisms for compensation/normalisation of disturbed function in different organ systems
- under supervision, perform a physical examination of different organ systems with an emphasis on normal findings
- perform first aid outside of the hospital in the case of accidents, or insufficient breathing or circulation

### **Community and Population health**

The student shall be able to:

- identify how an individual's health is related to her living conditions
- identify opportunities to maintain health and prevent disease
- identify important causes of disease and death in Sweden and internationally
- describe the organization of the health care and social service systems and the contacts between them and reflect upon the consequences of this structure for the patient and the doctor

## **Main contents**

Phase I covers terms 1-2. The first part of term 1 consists of the course Health, Ethics and Learning (HEL I), an integrated course for all of the programmes at the Faculty of Health Sciences. The subjects areas are studied from the vantage point of the student's own experiences and ideas as compared with scientifically supported theories. At the same time, PBL is introduced and practised.

During the remainder of term 1, sub-course Term 1:B, and Term 2, the focus is on central medical concepts of the normal functions of the body and the maintenance of balance and

health. The framework for this consists of the seven theme areas described above, which are primarily based on the body's organ systems. 'The Strand' in patient communication is introduced in sub-course Term 1:B. Additional information is provided in the course material for the sub-courses.

## **Teaching and study forms**

The pedagogical philosophy and method applied is problem-based learning. In the teaching, different methods are used, e.g. work in base groups based on Web-based scenarios, lectures, literature studies, examination of articles, seminars, field studies and the Strand "Patient contact, integrated perspective, and patient communication". The student's own questions and formulation of problems form the basis of problem-based learning. Of central importance is that the student takes responsibility in her learning, searches for and evaluates knowledge, practises cooperation and is able to cope with changes. Continuous evaluation is part of problem-based learning. The course requires students to study full time.

## **Examination**

Compulsory coursework includes active participation in activities such as base groups, completion of written assignments, seminars, the Strand "Patient contact, integrated perspective, and communication skills", other patient-related activities, skills training and integration activities with other programmes at the Faculty of Health Sciences. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Compulsory coursework is specified for each sub-course in the respective course material. Compulsory coursework is assessed on an ongoing basis during the sub-courses. Grades on the compulsory coursework are presented to the student two weeks prior to the first part of the final examination. Additional work required to compensate for missed compulsory activities is decided upon by the course examiner, who informs the student counsellor of his or her decision.

A combined written and oral examination is given after the sub-course HEL I. Written exams, which may be supplemented by practical and oral exams are given after the sub-courses Term 1:B and Term 2. In addition, during the sub-course Term 2, a phase examination, where students are required to search for information, is given. Students may only take an examination if they have completed the larger part of the sub-course in question. For further information, see the guideline Examinations in the medical programme.

Students may only participate twice in resource-heavy compulsory coursework such as the Strand "Patient contact, integrated perspective and patient communication", base group meetings and laboratory work. Written final examinations may be taken an unlimited number of times. Final examinations, which are oral or practical, may be taken no more than five times. More information on the rules for the sub-courses is given in the course material.

A student who fails a course or part of a course twice normally has the right to ask for a different written and/or oral examiner.

### **Pass requirements – Phase I. Health and biological function**

A passing grade on Phase I is conditional on the student having passing grades in the sub-courses HEL 1, Terms 1 and 2 and the phase examination. To take the phase examination (0 ECTS credits), the student must have a passing grade in the compulsory coursework in term 1 and have attended sub-course Term 2 to the time of the examination. The examination consists of an oral and a written section and tests student's information search skills. More information about the phase examination is provided in the course material for sub-course Term 2.

## **Admission and threshold rules**

Sub-course HEL 1: same as for acceptance to the programme.

Sub-course Term 1:B: passing grade on compulsory coursework during sub-course HEL 1.

Sub-course Term 2: passing grade on compulsory coursework during sub-courses HEL 1 and Term 1:B.

## **Grades**

Grades are awarded at the end of each sub-course/course and are based on an assessment of all the learning objectives stated for the phase and the respective sub-courses. The grading scale is pass or fail.

## **Course certificate**

A course certificate is issued, at the request of the student, by the director of studies.

## **Course literature**

There is no obligatory literature. A list of suggested literature is given at the beginning of or prior to the start of the sub-courses.

## **Course evaluation**

The planning and execution of courses shall be based on the syllabus. Accordingly, the course evaluation to be included in each course should deal with the question of how well the course conforms to the syllabus. At Linköping University, there are general regulations relating to electronic course evaluations (LiU 780/06-04).

Course evaluations take place continuously by means of oral, written or electronic communication with sub-course coordinator in accordance with the timetable for each sub-course. More information is provided in the course material for the sub-courses included. Clinical practice is evaluated both orally and in writing with supervisors and the respective coordinator. During Phase I, this applies in particular to the 'Strand' patient communication.

## **Quality assurance**

The medical school is constantly working to assure the quality of the programme. This means that the program's content and structure as well as examinations can be modified during the course of the program. Information about changes is given to those involved by no later than the beginning of sub-courses.

## **Gender**

The course is conducted in such a way that the experience and knowledge of both male and female students are made visible and developed.

## **Other**

If a course/sub-course is withdrawn or major changes are made to it, an examination in accordance with this syllabus is normally offered on a total of three occasions within the space of one year, one of which is shortly after the first examination.

## **Sub-course Health, Ethics, and Learning (HEL I), 12 EDTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives and overall objectives for HEL I. The themes discussed are health, ethics and

learning. More detailed descriptions of objectives for the themes in question are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework in the sub-course Health, ethics and learning (HEL I, 6 ECTS credits) consists of active participation in the base group and other coursework specified in the course material. There is continuous evaluation and feedback during the sub-course. Decisions on grades are announced before the end of this sub-course. The final examination (6 ECTS credits) takes place at the end of the sub-course and consists of both an oral and a written section. Additional information is provided in the course material.

## **Sub-course Term 1:B of Health and biological function, 18 ECTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. The themes are Gastroenterology-Nutrition-Metabolism and Life cycle-Endocrine-Reproduction-Neoplasia. More detailed descriptions of objectives in the four domains and in concept pyramids related to these themes are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework (9 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (9 ECTS credits), primarily a written examination, takes place at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 2 of Health and biological function, 30 ECTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. The themes are Professional attitudes-Public health, Circulation-Respiration-Kidney-Erythrocyte, Immune system-Infectious diseases and Neurology-Sense organs-Psychiatry-Locomotion. More detailed descriptions of objectives in the four domains and in concept pyramids related to these themes are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily a written examination, takes place at the end of the sub-course. Additional information is provided in the course material.

Approved by the Board for Undergraduate Education 31 January, 2007. Valid from 1 July, 2007

## **Syllabus Phase II – Degree of Master of Science in Medicine**

### **Health and Disease, 90 ECTS credits**

Course category: part of the Medical Programme.

#### **General**

This syllabus is based on the Medical Programme Syllabus in which important principles for the implementation of the programme are described. This information is repeated only in part in the syllabus. See also Appendix 1 of the Syllabus, which provides an overview of the contents of the programme's terms.

#### **Principles for and structure of objectives for Phase I**

The objectives are based on the competences described in the general objectives for higher education and in the national objectives for medical education in the areas Knowledge and understanding, Skills and abilities and Ability to evaluate and professional attitudes.

The phase objectives describe the direction and level of competences the student must achieve during the phase. They are divided into four domains: Science and learning, Professional Attitudes, Medical Science and Clinic and Community and Population Health. These domains are also present in the sub-course objectives, which cover both theoretical knowledge and practical skills.

The phase and sub-course objectives should be viewed in relation to the problems and situations presented in the scenarios for base group work and in other ways. Furthermore, the programme's objectives should be achieved in interplay between theory and practice. The student should always be able to justify practical skills with theoretical standpoints. Similar objectives may reappear during later terms, but with higher requirements. Objectives from an earlier term can also be the subject of examination in a later term.

#### **Objectives – Phase II**

##### **Science and Learning**

The student shall be able to:

- evaluate her own learning and develop her own learning strategies
- evaluate and utilise different learning sources for meaningful learning
- critically evaluate and summarize sources of medical information
- analyse and discuss principles for evidence-based medicine
- initiate and plan an independent scientific project
- actively contribute to and evaluate learning in inter-professional groups

##### **Professional Attitudes**

The student shall be able to:

- observe her own and the patient's reactions during consultation and physical examination

- observe the importance of the patient-doctor relationship for the success of treatment
- analyze and observe how age, sex, linguistic and cultural background relate to an individual's experience of health and disease
- analyze and discuss ethical dilemmas in the workings of the health care system

## **Medical Science and Clinic**

The student shall be able to:

- analyse and evaluate the importance of normal structure and function at the molecular, cell tissue, organ and organ system level for maintaining health
- analyse and explain pathophysiological mechanisms at the molecular, cell, tissue, organ and organ system levels that result in disturbed structure and function
- with human biological and pathophysiological mechanisms as the starting point, explain and analyse symptoms, findings and courses of different diseases
- with basic scientific and pathophysiological mechanisms as the starting point, analyse and explain diagnostic methods and principles for pharmacological and non-pharmacological treatment of different diseases
- propose diagnostic methods and treatment for common symptoms and diseases
- perform and justify the choice of simple laboratory tests and treatment performed at primary care units
- analyse and explain mechanisms leading to differences in the manifestation of disease due to age and gender
- independently perform a complete physical examination and identify abnormal findings
- structure patient history and clinical findings in written patient records

## **Community and Population Health**

The student shall be able to:

- analyse the influence of psychological and social factors in the development of disease
- analyse how physical factors in the environment can influence an individual's health
- analyse the impact of preventive measures at the group level and on society
- interpret epidemiological studies and discuss their relevance from a public health perspective
- describe the prevalence of disease in society and explain how this is manifested in the health care system
- describe the organization and economy of the health care system and reflect upon its importance for patients and the medical profession

## **Main contents**

The course covers the sub-courses Terms 3-5. During this phase, the students continue, and further develop, their studies of the body's normal function while studying the causes of and mechanisms behind the development of disease. Additionally, this phase includes the study of methods by which diseases may be diagnosed with different laboratory methods, how a patient examination is carried out and documented, and principles for how diseases may be prevented and treated. The 'Strand' continues in sub-course Term 4 and preparations for the independent

scientific project are made during sub-course Term 5. Additional information is provided in the course material for the sub-courses.

## **Teaching and study forms**

The pedagogical philosophy and method applied is problem-based learning. In the teaching, different methods are used, e.g. work in base groups based on Web-based scenarios, lectures, literature studies, examination of articles, seminars, field studies and the Strand “Patient contact, integrated perspective, and patient communication”. The student’s own questions and formulation of problems form the basis of problem-based learning. Of central importance is that the student takes responsibility in her learning, searches for and evaluates knowledge, practises cooperation and is able to cope with changes. Continuous evaluation is part of problem-based learning. The course requires students to study full time.

### **Examination**

Compulsory coursework includes completion of written assignments and active participation in activities such as base groups, seminars, the Strand “Patient contact, integrated perspective, and communication skills”, other patient-related activities, skills training and integration activities with other programs at the Faculty of Health Sciences. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Compulsory coursework is specified for each sub-course in the respective course material. Compulsory coursework is assessed on an ongoing basis during the sub-courses. Grades on the compulsory coursework are presented to the student two weeks prior to the first part of the final examination. Additional work required to compensate for missed compulsory activities is decided upon by the course examiner, who informs the student counsellor of his or her decision.

Written examinations, which may be supplemented by practical and oral exams, are given after the sub-courses Term 3 and Term 4 and after the first two themes during sub-course Term 5. Students may only take an examination if they have completed the larger part of the sub-course in question. For further information, see the guideline Examinations in the medical programme.

Students may only participate twice in resource-heavy compulsory coursework such as the Strand “Patient contact, integrated perspective, and communication skills”, base group meetings and laboratory work. Written final examinations may be taken an unlimited number of times. Final examinations, which are oral or practical, may be taken no more than five times. More information on the rules for the sub-courses is given in the course material.

A student who fails a course or part of a course twice normally has the right to ask for a different written and/or oral examiner.

### **Pass requirements – Phase II. Health and biological function**

A passing grade on Phase II is conditional on the student having passing grades in the sub-courses Terms 3-5 and the phase examination. The latter consists partly of an exam concerning communication with patients in the ‘Strand’ during the sub-course Term 4 and partly of a written exam at the end of sub-course Term 5. To take the phase examination for sub-course Term 4 (0 credits), the student must have a passing grade in the compulsory coursework in Term 3 and have completed the ‘Strand’ and sub-course Term 3 up until the time of the examination. To take the examination at the end of sub-course Term 5 (0 credits), the student must have a passing grade on the sub-courses in the phase. The examination also covers Phase I. More information about the phase examination is provided in the course material for sub-courses Term 4 and Term 5.

## **Admission and threshold rules**

Term 3: Passing grade on sub-course Term 1 and passing grade on compulsory coursework during sub-course Term 2.

Term 4: Passing grade on Phase 1 and passing grade on compulsory coursework during sub-course Term 3.

Term 5: Passing grade on sub-course Term 3 and passing grade on compulsory coursework during sub-course Term 4.

## **Grades**

Grades are awarded at the end of each sub-course/course and are based on an assessment of all the learning objectives stated for the phase and the respective sub-courses. The grading scale is pass or fail.

## **Course certificate**

A course certificate is issued, at the request of the student, by the director of studies or by a person authorised to do so.

## **Course literature**

There is no obligatory literature. A list of suggested literature is given at the beginning of or prior to the start of the sub-courses.

## **Course evaluation**

The planning and execution of courses shall be based on the syllabus. Accordingly, the course evaluation to be included in each course/sub-course should deal with the question of how well the course conforms to the syllabus. At Linköping University, there are general regulations relating to electronic course evaluations (LiU 780/06-04).

Course evaluations take place continuously by means of oral, written or electronic communication with the sub-course coordinator in accordance with the timetable for each sub-course. A written course evaluation is made at the end of each sub-course. More information is provided in the course material for the sub-courses included. Clinical practice is evaluated both orally and in writing after completed rotation with supervisors and the respective coordinator. During Phase II, this applies to the 'Strand' in patient communication and practical exercises in examination techniques during sub-course Term 5.

## **Quality assurance**

The medical school is constantly working to assure the quality of the programme. This means that the program's content and structure as well as examinations can be modified during the course of the program. Information about changes is given to those involved by no later than the beginning of sub-courses.

## **Gender**

The course is conducted in such a way that the experience and knowledge of both male and female students are made visible and developed.

## **Other**

If a course/sub-course is withdrawn or major changes are made to it, an examination in accordance with this syllabus is normally offered on a total of three occasions within the space of one year, one of which is shortly after the first examination.

## **Sub-course Term 3 of Health and disease, 30 ECTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. The themes discussed are Disease Mechanisms-Diagnostics-Treatment, Circulation-Respiration-Kidney-Erythrocyte and Professional attitudes-Public health. More detailed descriptions of objectives in the four domains and in concept pyramids related to these themes are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily a written examination, takes place at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 4 of Health and disease, 30 ECTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. The themes discussed are Gastroenterology-Nutrition-Metabolism and Life cycle-Endocrine-Reproduction-Neoplasia, Professional attitudes-Public health and Immune system-Dermatology-Infectious diseases. More detailed descriptions of objectives in the four domains and in concept pyramids related to these themes are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily a written examination, takes place at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 5 of Health and disease, 30 ECTS credits**

### **Objectives and contents**

The problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. The themes discussed are Neurology-Sense organs-Psychiatry-Locomotion, Professional attitudes-Public health and Disease mechanisms-Diagnostics-Treatment. More detailed descriptions of objectives in the four domains and in concept pyramids related to these themes are given in the course material.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework relating to the sub-course's first two themes is provided at the end of the second theme. An examination (15 ECTS credits), primarily written, is given after this theme has been completed. The results of this examination are announced in time for a re-examination, if necessary, before the Phase II examination. There is a practical examination for the theme Disease mechanisms-Diagnostics-Treatment. A decision on grades on sub-course Term 5 is

announced two weeks before the Phase II examination. Additional information is provided in the course material.

Approved by the Board for Undergraduate Education 31 January, 2007. Valid from 1 July, 2007

## **Syllabus Phase III – Degree of Master of Science in Medicine**

### **Patient and Prevention, 180 ECTS credits**

Course category: part of the Medical Programme.

#### **General**

This syllabus is based on the Medical Programme Syllabus in which important principles for the implementation of the programme are described. This information is repeated only in part in the syllabus. See also Appendix 1 of the Syllabus, which provides an overview of the contents of the programme's terms.

#### **Principles for and structure of objectives for Phase III**

The objectives are based on the competences described in the general objectives for higher education and in the national objectives for medical education in the areas Knowledge and understanding, Skills and abilities and Ability to evaluate and Professional attitudes.

The phase objectives describe the direction and level of competence the student must achieve during the phase. They are divided into four domains: Science and Learning, Professional Attitudes, Medical Science and Clinic and Community and Population Health. These domains are also present in the sub-course objectives, which cover both theoretical knowledge and practical skills.

The competence level aimed at is what the student shall be able to do at the start of the general internship. The emphasis is on handling patients with common symptoms with common underlying causes. The demands on independence are more pronounced during the initial evaluation of a patient and during emergencies.

The phase and sub-course objectives should be viewed in relation to the problems and situations presented in the scenarios for base group work and in other ways. Furthermore, the programme's objectives should be achieved in interplay between theory and practice. The student should always be able to justify practical skills with theoretical standpoints. Similar objectives may reappear during later terms, but with higher requirements. Objectives from an earlier term can also be the subject of examination in a later term.

#### **Objectives – Phase III**

##### **Science and Learning**

The student shall be able to:

- identify and evaluate knowledge gaps and learning needs in career-related situations and develop strategies to meet those needs
- analyse scientific hypotheses and results and evaluate their applicability in clinical practice
- carry out and present her independent scientific project orally and in writing

##### **Professional Attitudes**

The student shall be able to:

- apply a therapeutic and holistic approach in patient contacts
- be aware of the importance of an individual's disease for family and loved ones
- analyse and evaluate her own contact with patients and by doing so identify opportunities for professional development
- evaluate her own professional competence and responsibility in relation to specific health care situations
- identify situations in which a consultation is needed to support patient-related decisions
- identify and analyse everyday ethical dilemmas in the clinic and show preparedness for these situations
- identify and analyse ethical dilemmas in informative and preventive public health measures
- relate the medical profession and its areas of competence to other professionals and their areas of competence within the health care system
- collaborate with other professionals in the health care system to achieve optimal care of the patient
- observe the social, legal, and public responsibilities of medical professionals

### **Medical Science and Clinic**

The student shall be able to:

- analyse and evaluate choices of diagnostic methods and treatment as related to structure and human biological and pathophysiological mechanisms
- analyse and evaluate symptoms, findings and course of disease as related to structure and human biological and pathophysiological mechanisms
- analyse differences in the manifestation of disease due to age and sex
- evaluate manifestations of disease, independently initiate treatment, and carry out follow-ups of common somatic and psychiatric diseases
- evaluate and perform common diagnostic methods
- analyse rehabilitation needs and propose rehabilitation plans
- analyse and evaluate an individual's risk of developing disease and initiate preventive measures
- perform and evaluate physical and psychiatric examination appropriate for a given question or situation
- document in an appropriate manner the patient's history and physical examination as appropriate for the given question or situation

### **Community and Population Health**

The student shall be able to:

- analyse the association between poor health and living conditions
- analyse and discuss how age, sex, social and cultural background are related to health and disease in Sweden and globally
- propose preventive measures for groups of individuals

- analyse and implement relevant national statutes governing health and medical care
- collaborate with other organizations within the community such as the social insurance agency and social services
- analyse and evaluate epidemiological data from Swedish and international sources as well as their relevance and applicability in health care
- identify and analyse the most important health problems and health care needs in a global perspective
- analyse the economic consequences of medical decisions in relation to the patient and society as a whole

## **Main contents**

The course covers the sub-courses Terms 6-11. See sub-courses Terms 5 and 6 for the rules for the independent scientific project.

Independent scientific projects (30 ECTS credits) may be carried out individually or by two students together. The independent scientific project may be presented during the sub-courses Term 6-9. A passing grade on sub-course Term 6 and participation in the obligatory presentation are conditional on approval of the independent scientific project including the written report. The independent scientific project is approved after the presentation (0 ECTS credits).

During Terms 7-11, studies consist predominantly of clinical rotations at primary care units and in hospital clinics. During parts of the clinical rotations it is possible to select an elective rotation among various specialties. The sub-courses also comprise areas specified by the objective domains, which illustrate the common clinical practice from other perspectives such as scientific method, ethics, communication, leadership, inter-professional practice, public health and prevention. The “Strand” is completed during sub-courses Term 9/10 and sub-course Term 11 contains a study period focusing on acute emergencies. Additional information is provided in the course material for the sub-courses.

## **Teaching and study forms**

Problem-based learning is the pedagogical philosophy and method applied together with clinical rotations at hospital clinics and in primary care. The sub-courses are divided in such a way that the first 18 weeks, which include three two-week theoretical periods (theme weeks), are interspersed with three four-week clinical rotation periods. Two weeks are devoted to individual studies and examination.

In the teaching, different methods are used, e.g. individual tutoring in clinical practice, work in base groups based on Web-based scenarios, clinical base groups during clinical rotations, skills training, lectures, seminars, examination of articles, field studies with written reports and literature studies. The student’s own questions and formulation of problems form the basis of problem-based learning as well as clinical practice. Of central importance is that the student takes responsibility in her learning, searches for and evaluates knowledge, practises cooperation and is able to cope with changes. Continuous evaluation is part of both problem-based learning and clinical practice. Prior to rotation periods, learning plans are drawn up and after a rotation the student and the respective clinic are evaluated using a special form. The course requires students to study full time.

## **Examination**

Compulsory coursework includes completion of written assignments and active participation in activities such as base groups, seminars, clinical rotations, other patient-related activities, skills training and integration activities with other programmes at the Faculty of Health Sciences. When in contact with patients, the student shall exhibit behaviour appropriate for a physician.

Compulsory coursework is assessed on an ongoing basis during the sub-courses. Written examinations, which may be supplemented by practical and oral exams, are given after each of the sub-courses Term 7-11. For further information, see the guideline Examinations in the medical programme.

Students may only participate twice in resource-heavy compulsory coursework such as clinical practice and other course activities requiring individual supervision. Written final examinations may be taken an unlimited number of times. Final examinations, which are oral or contain laboratory/practical course activities, may be taken no more than five times. More information on the rules for the sub-courses is given in the course material.

### **Pass requirements – Phase III. Patient and Prevention**

A passing grade on Phase III is conditional on the student having passing grades in the sub-courses Terms 6-11 and the phase examination. These consist of an exam comprising different stations (Objective Structured Clinical Examination; OSCE), which focuses primarily on practical skills during sub-course Term 9 (0 ECTS credits), an exam on the correlation between pathophysiological/basic scientific mechanisms and clinical problems during sub-course Term 10 (0 ECTS credits) and, during sub-course Term 11, a written exam on examination of scientific articles (0 ECTS credits) and acting as an opponent in the presentation of another student's independent scientific project (0 ECTS credits).

To take the phase examinations, the student must always have a passing grade on the compulsory coursework in the preceding sub-course and have attended the respective sub-course up until the time of the examination. The examination also covers previous phases. More information about the phase examinations is provided in the course material for sub-courses Term 9, 10 and 11.

A student who fails a course or part of a course twice normally has the right to ask for a different written and/or oral examiner.

### **Admission and threshold rules**

- Term 6: Passing grade on sub-course Term 4 as well as passing grade on compulsory coursework during Term 5. In addition, the student must have an approved independent scientific project plan and a passing grade from the phase examination on patient communication in sub-course Term 4.
- Term 7: Passing grade from Phase II examination as well as passing grade on compulsory coursework during sub-course Term 6.
- Term 8: Passing grade on compulsory coursework during the sub-course Term 7. Term 9: Passing grade on sub-course Term 9 as well as passing grade on compulsory coursework during the sub-course Term 8.
- Term 10: Passing grade on sub-course Term 8, passing grade on compulsory coursework during sub-course Term 9 and passing grade on independent scientific project and its presentation.
- Term 11: Passing grade on sub-course Term 9, passing grade on compulsory coursework during sub-course Term 10 and passing grade from the phase examination on sub-course Term 9.

### **Grades**

Grades are awarded at the end of each sub-course/course and are based on an assessment of all the learning objectives stated for the phase and the respective sub-courses. The grading scale is pass or fail.

## **Course certificate**

A course certificate is issued, at the request of the student, by the director of studies or by a person authorised to do so.

## **Course literature**

There is no obligatory literature. A list of suggested literature is given at the beginning of or prior to the start of the sub-courses.

## **Course evaluation**

The planning and implementation of courses shall be based on the syllabus. Accordingly, the course evaluation to be included in each course/sub-course should deal with the question of how well the course conforms to the syllabus. At Linköping University, there are general regulations relating to electronic course evaluations (LiU 780/06-04).

Course evaluations take place continuously by means of oral, written or electronic communication with the sub-course coordinator in accordance with the timetable for each sub-course. A written course evaluation is made at the end of each sub-course. More information is provided in the course material for the sub-courses included. Clinical practice is evaluated both orally and in writing, after completed rotation, with supervisors and, if necessary, the respective coordinator.

## **Quality assurance**

The medical school is constantly working to assure the quality of the programme. This means that the program's content and structure as well as examinations can be modified during the course of the program. Information about changes is given to those involved by no later than the beginning of sub-courses.

## **Gender**

The course is conducted in such a way that the experience and knowledge of both male and female students are made visible and developed.

## **Other**

If a course/sub-course is withdrawn or major changes are made to it, an examination in accordance with this syllabus is normally offered on a total of three occasions within the space of one year, one of which is shortly after the first examination.

## **Sub-course Term 6 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The scientific problems arising during the sub-course shall be studied in accordance with the phase objectives. More detailed information on objectives in the domain Science and Learning can be found on the sub-course's homepage.

### **Compulsory coursework and final examination**

Compulsory coursework (30 ECTS credits) consists of active work, under supervision, on a scientific project chosen by the student. Evaluations of the student's work on the scientific project, together with feedback, are given regularly throughout the sub-course. See the sub-course's homepage. It is also possible for medical students to substitute this sub-course with a

single subject course (30 ECTS credits) related to the “Master programme in medical bioscience” at Linköping University.

Independent scientific projects can be presented during the sub-courses Term 6-9. A passing grade in the final examination (0 ECTS credits) includes an approved independent scientific project together with written documentation as well as an oral presentation. Regarding acting as an opponent in the presentation of another student’s independent scientific project, see phase examination Phase III.

## **Sub-course Term 7 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The medical problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. More detailed descriptions of objectives in the four domains and in concept pyramids for deeper theoretical competence related to the themes are given in the course material. The themes included are Neurology-Sense organs-Psychiatry-Locomotion and Professional Attitudes-Public Health. Clinical rotations comprise ophthalmology, ear nose and throat, dermatology, primary care, and infectious diseases, which could include radiology.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily written and oral, is administered at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 8 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The medical problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. More detailed descriptions of objectives in the four domains and in concept pyramids for deeper theoretical competence related to the themes are given in the course material. The themes included are Circulation-Respiration-Kidney-Erythrocyte, Gastroenterology-Nutrition-Metabolism and Professional attitudes-Public Health. Clinical rotations comprise internal medicine/cardiology, surgery, including out-patient clinics and primary care.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily written, is administered at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 9 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The medical problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. More detailed descriptions of objectives in the four domains and in concept pyramids for deeper theoretical competence related to the themes are given in the course material. The themes included are Circulation-Respiration-Kidney-Erythrocyte, Neurology-Sense organs-Psychiatry-Locomotion and Professional Attitudes-Public Health. Rotations comprise internal medicine sub-specialties including outpatient clinics, orthopaedics, primary care and inter-professional training at the student ward. Half the students are assigned rotation at the student ward while the other half attend the final “Strand week” and are assigned an elective rotation in hospital out-patient clinics.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily written, is administered at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 10 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The medical problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. More detailed descriptions of objectives in the four domains and in concept pyramids for deeper theoretical competence related to the themes are given in the course material. The themes included are Life cycle-Endocrine-Reproduction-Neoplasia, Neurology-Sense organs-Psychiatry-Locomotion and Professional Attitudes-Public Health. Rotations comprise psychiatry, neurology, geriatrics and primary care. Half the students are assigned rotation at the teaching ward while the other half attend the final “Strand week” and are assigned an elective rotation in hospital out-patient clinics.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily written, is administered at the end of the sub-course. Additional information is provided in the course material.

## **Sub-course Term 11 of Patient and Prevention, 30 ECTS credits**

### **Objectives and contents**

The medical problems and situations arising during the sub-course shall be studied in accordance with the phase objectives. More detailed descriptions of objectives in the four domains and in concept pyramids related to the themes are given in the course material. The themes discussed are Life cycle-Endocrine-Reproduction-Neoplasia, Immune system-Dermatology-Infectious diseases and Professional Attitudes-Public Health. Rotations comprise paediatrics, gynaecology

and obstetrics, and emergencies. The latter period includes rotation in anaesthetics and training of measures in different emergency states.

### **Compulsory coursework and final examination**

Compulsory coursework (15 ECTS credits) consists of active participation in course activities in accordance with the syllabus and as specified in the course material. When in contact with patients, the student shall exhibit behaviour appropriate for a physician. Grade information on the compulsory coursework is provided two weeks prior to the first part of the final examination. The final examination (15 ECTS credits), primarily written, is administered at the end of the sub-course. Additional information is provided in the course material.

# Suggested literature for the medical programme 2006-2007

**Title**

**Author(s)**

## **Anatomy**

- |   |   |
|---|---|
| Anatomisk bildordbok  | Feneis Heinz, W. Dauber                         |
| Anatomy development Function Cl. corr.                      | Larsen WJ                                       |
| Atlas of human anatomy                                      | Netter FH                                       |
| Atlas of human anatomy                                      | Putz, Reinhard/Pabst, Reinhard/Sobotta Johannes |
| Clinically oriented anatomy                                 | Moore KL, Dalley AF.                            |
| Gray's anatomy for students                                 | Drake R.L. Vogl W & Mitchell AWM                |
| Human Anatomy McMinn's colour atlas                         | Abrahams PH, Marks SC, Hutchings RT             |
| Neuroanatomy. An atlas of structures, sections, and systems | Harnes DE, Lancon JA.                           |
| Röresleapparaters anatomi                                   | Bojisen-Möller F                                |

## **Anesthesiology**

- Anestesi - en inledande genomgång  
Basics of anesthesia

Redke F  
Miller RD, Stoelting RK

## **Biochemistry and cell biology**

- Biochemistry  
Biochemistry  
Medicinsk genetik en introduktion  
Molecular biology of the cell  
Molecular Cell Biology  
Molekylärbiologi

Champe P, Harvey RA  
Stryer L  
Kristoffersson Ulf  
Alberts B  
Lodish H F  
Brändén H

## **Clinical chemistry**

- Clinical Chemistry  
Laurells klinisk kemi i praktisk medicin

Marshall WJ, Bangert SK  
Nilsson-Ehle P. Ganrot P-O

## Clinical physiology

Klinisk fysiologi, nuklearmedicin & klinisk neurofysiologi

Jonsson B, Westling H, White T, Wollmer Per

## Dermatology

Dermatologi, venerologi

Dermatology, an illustrated colour text

Rorsman Hans, Björnberg A, Wahlquist A  
Gawkrödger David J.

## Embryology

Human embryology

Langman's medical embryology

The developing human, clinically oriented embryology.

Larsen WJ  
Sadler, Tomas W  
Moore KL, Persaud TVN

## Endocrinology

Endokrinologi

Werner S

## Evidence based medicine

Evidensbaserad medicin. I Sherlock Holmes fotspår...

Evidensbaserad medicin

<http://www.cche.net/usersguides/main.asp>

<http://www.google.se/search?hl=sv&q=otorhinolaryngology&meta=>

Nordenström Jörgen  
Baak-Andersen

## Genus

Genus - om det stabila föränderliga former

Genusperspektiv på medicin, [www.hsv.se](http://www.hsv.se) rapport 2004

Kön och ohälsa - en antologi

Hirdman Y.  
Hammarström A.  
Östlin, Danielsson, Diderichsen, Härenstam, Lindberg

## **Geriatrics**

Geriatrrik

Dahlin, Rundgren

## **Gynecology & obstetrics**

Clinical gynecologic endocrinology and infertility.

Current obstetric & gynecologic diagnosis & treatment

Fundamentals of obstetrics and gynaecology

Obstetrisk öppenvård

Öppenvårdsgynekologi

Speroff L, Fritz MA

De Cherney A, Perroni ML

Llewellyn-Jones

Marsal K, Grenner L

Gottlieb C, von Schoultz B

## **Histology**

Histology and cell biology

Histology, a text atlas

Human histology

Kierszenbaum AI.

Ross MH, Kaye GI, Romrell LJ

Stevens A., Lowe J

## **Immunology**

Cellular and molecular immunol.

Immunobiology

Abbas, Lichtman

Janeway CA

## **Infectious diseases**

Infektionssjukdomar

Norby & varsson

## **Internal medicine**

Clinical medicine

Davidson´s principles and practice of medicine...

Harrison´s principles of internal medicine

Internal medicine

Kärtsjukdomar - lärobok i medicinsk angiologi

Kumar PJ, Clark ML.

Haslett C, Chilvers RE, Boon NA, Colledge NR, Hunter JAA.

Harrison TR

Asplund KM et al

## Leadership

Arbetsgruppsens psykologi  
Den goda organisationen  
Ledarskapets fallgropar

Lenn er Axelsson B, Thylefors L  
Schutz W  
Adidez I.

## Medical communication

Det r cker inte att vara sn ll  
Konsultationen

Holm U  
Pendleton D et al

## Microbiology

Medical microbiology  
Medical microbiology

Mims C, Dockrell HM, Goering RV, Rott I, Wakelin D, Zuckerman M  
Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA.

## Neuroscience

Fundamental Neuroscience for basic & clin. applications.  
Grundl ggande neurokirurgi  
Neurologi  
Neuroscience: Exploring the brain  
Neuroscience  
The central nervous system.

Haines DE  
Mellerg rd P.  
Aquilonius Sten-Magnus  
Bear MF, Paradiso MA, Connors B  
Purves D, Fitzpatrick D et al  
Brodal P.

## Nutrition

The nutrition society textbook series

Gibney MJ et al

## Occupational & environmental medicine

Arbets- och milj medicin  
Milj h lsorapport 2001  
Milj h lsorapport 2005

Edling C, Nordberg G  
Socialstyrelsen  
Socialstyrelsen

<http://www.socialstyrelsen.se/NR/rdonlyres/A4E29A85-97A6-46C9-8347-9E792285735C/3026/20051111.pdf>  
Casarett and Doull's Toxicology. The basic science of poisons

<http://www.socialstyrelsen.se/NR/rdonlyres/A4E29A85-97A6-46C9-8347-9E792285735C/3026/20051111.pdf>  
Klaassen CD

## **Oncology**

Onkologi  
Principles of molecular oncology  
The biology of cancer

Ringborg U, Henriksson R, Friberg S  
Bronchud MH, Foote M, Giaccone G, Olopade O, Workman P  
Weinberg RA

## **Ophthalmology**

Oftalmologi  
Ögonsjukdomar i primärvård  
Ögonundersökningar  
Ophtalmology

Hivding G, Fagerholm P, Tengroth B.  
Lönwe B.  
Hahnenberger R  
Lang GK

## **Orthopaedics**

Essential orthopaedics and trauma  
Orto  
Ortopedi i primärvård

Dandy DJ & Edwards D  
Lindgren U  
Lind BC

## **Otorhinolaryngology**

Önh  
ÖNH praktika

Anniko Matti  
Engquist S

## **Pathology**

General and Systematic Pathology  
Pathological basis of diseases  
Rubin's Pathology Clinicopathologic Foundations of Medicine

Underwood  
Robbins SL, Kumar V & Cotran  
Rubin E, Strayer D, Rubin R.

## **Paediatrics**

Akut pediatrik  
Barnmedicin  
Barnmedicin i ett nötskal  
Nelson essentials of paediatrics  
Perinatalmedicin  
Practical paediatrics

Larsson A  
Lindberg T, Lagercrantz H  
Miall L, Rudolf M  
Behrman RE, Kliegman RM, Jenson HB  
Persson B, Westergren M  
Robinson MJ, Robertsson DM

## **Pharmacology**

Essential psychopharmacology  
Illustrerad farmakologi 1-2  
Narkotika, dopningsmedel och hälsofarliga varor  
Pharmacology  
The pharmacological basis of therapeutics

Stahl SM, Muntner N  
Simonsen, Aarbakke, Hasselström, Lyså  
Svenska Carnegiesitutet, Svenska Narkotikapolisföreningen  
Rang HPZ, Dale MM  
Godman Gilman, Hardman, Joel G, Limbird. Lee E

## **Physiology**

Medical physiology  
Review of medical physiology  
Textbook of medical physiology

Boron W, Boulpaep EL  
Ganong WF  
Guyton Ac et al

## **Psychiatry**

Att utvecklas med handikapp. Möjligheter och begränsningar hos barnet  
Barn- och ungdomspsykiatri  
Barn- och ungdomspsykiatri  
Psyk  
Sexuella övergrepp mot pojkar och flickor  
Utvecklingspsykologi

Lagerheim B  
Cederblad M  
Gillberg C, HELLGREN L,  
Ottosson JO  
Svedin CG, Back L  
Havnesköld L

## Public health and epidemiology

Att växa mot alla odds  
Epidemiology  
Folkhälsorapport  
Från barndom till vuxenliv  
Global folkhälsa-tar vi vårt ansvar?  
Grunderna i epidemiologi  
Hälsans mysterium  
Hälsöekonomins grunder  
Hälsa- och sjukvårdsrätt  
Introduktion till Folkhälsovetenskap  
Integration till svensk välfärd? Rapport 96  
Medicinsk juridik  
Preventiv medicin i teori och praktik  
Rapport integration 2003  
Samhällsproblem  
Sjukvårdens etiska grunder  
Sjukdomens mening  
Sjukskrivningsboken  
Socialmedicin och Psykosocial Medicin  
Vetenskapligt förhållningssätt

## Statistics

Introduktion till medicinsk statistik  
Statistik för hälsovetenskaparna

## Surgery

Akut kärnkirurgi  
Kir.  
Kirurgi  
Sabiston Textbook of Surgery

Emmy E, Smith W, Smith RS  
Gordis L  
Socialstyrelsen  
Cederblad M  
Werkö Lars  
Ahlbom A, Norell S  
Antonovsky A  
Brodin H, Andersson A  
Rönberg L  
Svanström L  
Statistiska centralbyrån, Arbetslivsinstitutet  
Adler H  
Orth-Gomér K, Perski A  
Integrationsverkets hemsida  
Goldberg T  
Sundström P  
Svenaeus F  
Järnholm B, Olofsson C  
Allebeck P, Theorell T  
Olsson A.G. Strålfors P.

Bring J, Taube A  
Eijertsson, Göran

Olofsson P, Wahlberg E  
Hamberger B, Haglund U  
Jepsson B, Peterson H-I, Risberg Bo  
Townsend Jr CM, Beauchamp RD, Evers BM, Mattox KL.