



## **General curriculum for doctoral studies in Medical Science**

For students admitted as of January 1<sup>st</sup>, 2012, aiming for a doctoral degree

### **1. Objective**

The objective with the doctoral studies at the Faculty of Medicine at Umeå University is to increase knowledge within the subject of medical science and to contribute to society's development within this field. After a degree of Doctor, continued work is expected to take place within pure research at a research institute or within industry, as combined researcher and teacher within higher education, as a research competent leader within health care or industry, as a consult, etc. These different types of work organizations have different requirements. Doctoral studies at the Faculty of Medicine at Umeå University, shall therefore provide a broad base and prepare for future research and work even beyond the individual doctoral studies' project.

### **2. Goals for the education**

Doctoral studies at the Faculty of Medicine at Umeå University shall offer the doctoral student the possibility to develop both high, general competency within medical science and scientific methods, as well as specialized scientific competency within the research field that the dissertation project covers.

#### **2.1 Degree of Doctor in Medical Science**

##### **National learning outcomes**

##### ***Knowledge and understanding***

For the Degree of Doctor the third-cycle student shall

- demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field, and
- demonstrate familiarity with the research methodology in general and the methods of the specific field of research in particular.

##### ***Competence and skills***

For the Degree of Doctor the third-cycle student shall

- demonstrate the capacity for scholarly analysis and synthesis as well to review and assess new and complex phenomena, issues and situations autonomously and critically
- demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work

\* This document has been translated into English. In case of divergence of meaning between the English and Swedish wording of this document, the Swedish wording shall prevail.



- demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research
- demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general
- demonstrate the ability to identify the need for further knowledge and
- demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.

### ***Judgement and approach***

For the Degree of Doctor the third-cycle student shall

- demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics, and
- demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

### **Local learning outcomes**

#### ***Knowledge and understanding***

For the Degree of Doctor, the third-cycle student shall

- demonstrate broad knowledge in the field of general scientific theory and in the field of medical science in particular

#### ***Competence and skills***

For the Degree of Doctor, the third-cycle student shall

- demonstrate a good ability to relate their own research to other current medical research and by extension to clinical application and other social benefit

#### ***Judgement and approach***

For the Degree of Doctor, the third-cycle student shall

- demonstrate a good ability to relate to the complexity of medical research, its ethical aspects and its impact on individuals and society



### **3. Eligibility and prerequisites**

The requirements for admission to third-cycle courses and study programmes are that the applicant meets the general and specific entry requirements that the higher education institution may have laid down, and is considered in other respects to have the ability required to benefit from the course and study programme. (HF chapt. 7, 35 §)

#### **3.1. General entry requirements**

A person meets the general entry requirements for third-cycle courses and study programmes if he or she has been awarded a second-cycle qualification, has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second-cycle, or has acquired substantially equivalent knowledge in some other way in Sweden or abroad. The higher education institution may permit an exemption from the general entry requirements for an individual applicant, if there are special grounds. (HF chapt. 7, 39 §)

A person who meets the general entry requirements for third-cycle courses and study programmes, i.e., basic higher education consisting of at least 120 credits or equivalent knowledge that has been acquired in another manner within or outside Sweden, will also be considered to meet the general entry requirements, though until no later than the end of June 2015.

#### **3.2. Specific entry requirements**

In order to meet the entry requirements for third-cycle courses and study programmes, it is required that the applicant has:

1. knowledge from one or more higher education courses and study programmes or corresponding courses and study programmes
2. necessary language skills in English, concerning both oral and writing skills. Assessment of these skills is done by having the intended doctoral student present his/her research plan in English for the department's doctoral studies group.

Specific entry requirements for each subject area can be found in the study plans. These study plans are kept at the departments and at the Dean's office.

### **4. Selection**

Selection from among applicants meeting the requirements shall be based on the following assessment basis:

- ability to benefit from doctoral studies

When examining the ability to benefit from the programme, the following assessment basis applies:



- Communication skills, written and spoken
- Critical skills
- Analytical skills
- Performance within specific time frames

However, the fact that an applicant is considered able to transfer credits from prior courses and study programmes or for professional or vocational experience may not alone give the applicant priority over other applicants (HF chapt. 7, 41 §).

Position opening for doctoral studies must be advertised. The advertisement will be posted on the university's webpage for at least 3 weeks. The decision of selection to doctoral studies is made by the supervisor and the doctoral studies group at the department. The assessment of the suitability of the applicant to pursue doctoral studies within the relevant subject area is made in conjunction with an interview for which the supervisor is responsible. Thereafter, an obligatory admission seminar will be held in English. The decision of selection is then established by the head of the department.

The decision of admittance to doctoral studies for Degree of Doctor as the final goal is determined by the Director of studies.

## **5. The education's design and content**

### **5.1. The education's design**

Doctoral studies result in a Degree of Doctor or a Degree of Licentiate. The education shall be comprised of 240 ECTS for the Degree of Doctor.

Doctoral studies that are finished with a Degree of Doctor include up to four years net study time, and are comprised of writing a PhD thesis, as well as attending courses on a doctoral level, in total the equivalent of 240 ECTS.

An individual study plan where financing, supervision, courses and thesis work, etc. is specified is made up for each doctoral student. The individual study plan must be followed-up at least once a year.

### **5.2. Content**

#### *5.2.1 Courses*

##### *Degree of Doctor*

Doctoral courses are included in doctoral studies. Doctoral students shall achieve a knowledge requirement equivalent to at total of 30 ECTS for a degree of Doctor. 30 ECTS will be achieved by compulsory doctoral courses (6 ECTS) and one compulsory presentation at a national/international conference (1.5 ECTS), other doctoral courses and other credit giving activities such as active participation in the department's seminars and journal clubs, participation in national/international conferences with a presentation of the doctoral student's results, research visit with another research group at another university and participation in university level pedagogy courses. 15 ECTS of the total 30 ECTS need to be gained through courses.



The obligatory courses consists of courses in scientific theory with research design (3 ECTS) ethics (3 ECTS) and a presentation at a national/international conference (1.5 ECTS).

In addition, a course in basic principles in laboratory animal science is obligatory if laboratory animals are included in any of the student's sub-projects. A course in Good Clinical Practice (GCP) or equivalent is obligatory for all doctoral students carrying out clinical human research. Application for getting credit towards the obligatory courses must take place before the time of the doctoral student's admission. Send the application directly to the course leader, certificates of earlier studies must be attached.

On completion of their studies, the doctoral student must possess skills in statistics, which were acquired before or during their doctoral studies.

Evaluation: For the courses within doctoral studies there are achievement tests or equivalent tests which are assessed with one of the following grades; pass or fail. The grade is determined by a specifically designated teacher (examiner).

### *5.2.2 Doctoral thesis*

The doctoral thesis must be comprised of a collection of scientific articles with an introduction to and a summary of these (doctoral thesis), or as a comprehensive, connected scientific work (doctoral thesis on a unified theme).

A compilation thesis must contain scientific papers and an introduction, description of method, summary discussion, concluding discussion/reflection and the benefit of the doctoral thesis to the research community and to society in general. The doctoral student must write the summarising chapter of the compilation thesis independently. For a doctoral thesis, two accepted papers are required in order to be able to defend the thesis. The doctoral student must be the first author on at least one of these publications. A doctoral thesis usually contains a total of 3-5 papers.

A doctoral thesis on a unified theme is a comprehensive, connected scientific work.

Advance review of the thesis is performed by 2 reviewers appointed by the editor appointed by FUT and should take place when:

- \* the thesis comprises a monograph
- \* only one of the manuscripts included in the dissertation are accepted or published in a refereed international journal
- \* the doctoral student is not first author of any of the publications in the thesis.

The doctoral thesis must be defended orally at a public defence. It is assessed with one of the following grades; pass or fail. When determining the grade, the committee shall take into consideration the contents of the thesis and the defence of this.



## **6. Follow-up**

### Follow-up of doctoral students

The Faculty of Medicine has the overarching responsibility for doctoral studies at the faculty, while the department where the doctoral student is admitted has the responsibility for the individual doctoral student's education. The doctoral student's progress is consequently a responsibility that lies with both the faculty and the department, even if the main responsibility when it's about the education itself, in the first case belongs to the main supervisor. Information about the doctoral student's activity during the current term must be noted in LADOK by the respective department at the latest by June respectively December.

The Director of studies is responsible on behalf of the faculty to follow-up on the doctoral student's progress. This is done through a yearly follow-up of the individual study plan. The annual follow-up is carried out by the department the 1<sup>st</sup> and 3<sup>rd</sup> year. The interim seminar makes up an important part of the follow-up of the doctoral student's progress. The interim seminar is obligatory (provided that the doctoral student does not take a licentiate degree instead).

The responsibility that the interim seminar takes place rests, in contrast to the licentiate seminar, entirely on the department. A certificate that confirms that the interim seminar has been done must be sent to the Dean's Office along with the statement by the appointed review group.

After the 4<sup>th</sup> year, the Director of studies examines the Application for public defence of thesis. The departments' doctoral studies groups are responsible for providing the Dean's office with lists each semester of the doctoral students who have been followed up during the current semester. The Director of studies reviews these lists.

## **7. Examination**

### **The examination of national and local learning outcomes takes place as follows**

#### ***Knowledge and understanding***

- \* Obligatory course in scientific theory and research methodology; examined by the course leader
- \* Literature course; examined by the individual examiner
- \* The summarising chapter of the compilation thesis and public defence of doctoral thesis; examined by the examination board

#### ***Competence and skills***

- \* Seminar and journal club activities, assessed by the department's teacher in charge of doctoral studies in consultation with the individual examiner and supervisor; the individual examiner approves and awards points prior to registration in LADOK
- \* Presentation of results at national/international conference (obligatory element), the individual examiner approves and awards points prior to registration in LADOK



- \* Teacher training for higher education (obligatory for doctoral students who teach); examined by the course leader
- \* Teaching at first-cycle and second-cycle level; assessed by the department's teacher in charge of doctoral studies in consultation with the relevant course leader
- \* Annual follow-up; performed by the supervisor and examiner
- \* Midterm seminar; assessed by the review group
- \* Writing of popular science texts and press releases; reviewed by the supervisor and public information officer at the Dean's office
- \* Doctoral thesis and public defence of doctoral thesis; examined by the examination board

### ***Judgement and approach***

- \* Obligatory ethics course, laboratory animals course and a course in GCP; examined by the respective course leaders
- \* Seminar and journal club activities, assessed by the department's teacher in charge of doctoral studies in consultation with the individual examiner and supervisor; the individual examiner approves and awards points prior to registration in LADOK
- \* Doctoral thesis and public defence of doctoral thesis; examined by the examination board

The Degree of Doctor is achieved after the doctoral student has completed the doctoral studies of 240 ECTS and thereby has received the grade pass on those tests that are included in the education as well as authored and at a public defence defended a PhD thesis, which is approved by the examination board.

A doctoral student who originally planned to obtain a doctorate may conclude their studies with a licentiate degree, where the requirements for this are met.

The diploma is issued after an application is filed with the Student Services / Degree Evaluation Office.

## **8. General instructions**

Existing regulations for doctoral studies are taken from:

- Higher Education Ordinance (HF): chapt. 5. (Employment as Doctoral Student) and chapt. 6 (The Education) and chapt. 7 (Admission to Education), appendix 2 (Degree Ordinance)
- The admission ordinance for doctoral studies at Umeå University (dnr 500-1168-11)
- Local degree ordinance at Umeå University (dnr 540-2958-11)
- Regulations for doctoral studies at Umeå University (dnr 500-953-13)
- Administrative procedure for the withdrawal of resources (dnr 500-3000-10)
- The Faculty of Medicine's PhD Student Handbook