FACULTY OF MEDICINE

GENERAL STUDY PLAN MEDICAL SCIENCE

Reg. No.
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Research Studies Board

General Study Plan for Doctoral studies in Medical Science

Scope: 240 credits

Qualification: Degree of Doctor

Approved on 11 June 2018

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This is a translation of the Swedish version. In the event of any discrepancy, the Swedish version has preferential interpretation.

OBJECTIVES

The principal aim of the doctoral programme in medical science is to train researchers who can drive development within medicine and health forwards, through their own discoveries and through the critical review and introduction of new experiences and methods within the healthcare system.

1. THE SUBJECT

1.1. Research studies subject

The subject of medical science in this context is a collective term for research that aims in different ways to promote people's health and prevent ill-health as well as mitigate and cure diseases. The subject encompasses everything from studies of cells to society such as

- medically relevant models *in vitro* and *in vivo* with perspectives from molecular genetics, chemistry, cell biology, physiology and pharmacology
- explanations of common and uncommon diseases and conditions, and the development of new diagnosis and treatment methods and as well as new types of healthcare
- the significance of lifestyle, environment, society structure, working life and the healthcare system for health at individual, group and population levels
- health-promoting interventions and knowledge about how they can be implemented
- professional and organisational developments of relevance to medical science and health science.

1.2. Project

The research project is described in the individual study plan. The project is unique to each doctoral student and the individual study plan is to clearly present how the doctoral student is to acquire the knowledge and methods required to conduct the project.

2. LEARNING OUTCOMES

The doctoral programme shall be based fundamentally on the knowledge acquired by students in first and second-cycle courses and study programmes, or on equivalent knowledge.

In addition to the requirements for first and second-cycle courses and study programmes, the doctoral programme shall develop the knowledge and skills required to be able to undertake autonomous research (The Swedish Higher Education Act, Chapter 1, Section 9a).

For the doctoral degree the doctoral student shall

Knowledge and understanding

- 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 research methodology in general and the methods of the specific field of research in particular.

Competence and skills

- demonstrate the capacity for scholarly analysis and synthesis as well as 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
- 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

- 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 goals at Lund University

- demonstrate knowledge of sustainable development of relevance to the subject
- demonstrate the ability to apply an international perspective in the subject
- demonstrate the ability to apply gender equality and equal opportunities perspectives in the subject

3. SCOPE OF THE PROGRAMME

The scope of the doctoral programme is 240 credits – i.e. four years of full-time study or a maximum of eight years of part-time study and concludes with a Degree of Doctor of Medical Science. One stage of at least 120 credits can conclude with a Degree of Licentiate of Medical Science (see general study plan for licentiate degree).

For the doctoral degree, the allocation of credits for courses and literature study on the one hand and the thesis project on the other is a maximum of 60 credits for courses and literature study and a minimum of 180 credits for the doctoral thesis.

4. ADMISSION REQUIREMENTS

The requirements for admission to the doctoral programme are that the applicant meets the general and specific admission requirements and is considered in other respects to have the ability required to benefit from the course or study programme.

4.1. General admission requirements

A person meets the general entry requirements for the doctoral programme if he or she:

- has been awarded a second-cycle qualification, or
- has met 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 Research Studies Board may permit an exemption from the general admission requirements for an individual applicant, if there are special grounds.

4.2. Specific admission requirements

Specific admission requirements relate to knowledge from first and second-cycle study programmes or equivalent but may also relate to specific professional experience. In addition, there is a requirement for sufficient knowledge within the subject area for the doctoral programme.

The specific admission requirement is met by a person who has

- at least 60 credits within the subject area of medical science

Students with a first-cycle qualification obtained outside Scandinavia are to have knowledge equivalent to 3 years of studying English in upper secondary school (a pass in the exam) if they have a first language other than English.

5. SELECTION

In accordance with the Higher Education Ordinance's regulations the selection between applicants is to be primarily based on an assessment of the candidates' ability to benefit from the programme. Regarding admission, it is mainly the applicant's qualifications from first and second-cycle studies that can normally be assessed. In this context, breadth, depth and relevance as well as components demonstrating autonomous work are to be taken into consideration. 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.

6. PROGRAMME STRUCTURE AND CONTENT

6.1. Individual study plan

An individual study plan is to be drawn up for each doctoral student in conjunction with admission to doctoral studies. The study plan is to be drawn up in consultation between the doctoral student and the supervisor and thereafter be approved by the assistant head of department responsible for doctoral studies. The study plan content is to include:

- a plan for the doctoral student's research assignment, the research project
- a timetable for the programme
- the obligations of the doctoral student and supervisor
- the scope and content of supervision
- information on the courses (beside compulsory courses) and the literature on which the doctoral student will be assessed
- what is otherwise needed for the programme to be conducted efficiently.

The studies are to be planned so that they can be completed on a full-time basis in four years or a maximum of eight years on a part-time basis. The study plan is to be updated annually.

6.2. Courses

At admission to the PhD programme, the doctoral students should, as an introduction to PhD studies, do a mandatory assignment which should be certified by the supervisor (a). Furthermore, the doctoral students are admitted to the Research School in Medical Science with a total course requirement of 13.5 credits (b). In addition to the courses within the Research School, one elective doctoral course comprising 1.5 credits is required (c) as well as a completed Portfolio in the course Generic Knowledge and Skills worth 12 credits (d). There are additional mandatory courses for those doctoral students who will perform animal experiments (e) or do teaching (f). Furthermore, it is mandatory for all doctoral students to attend a number of seminars (g).

a) Introduction to PhD studies
b) Research School in Medical Science
    i. Introduction to Research Methodology, 3 credits
    ii. Theory and practice of scientific communication, 1,5 credits
    iii. Applied statistics I, 1.5 credits
    iv. Research ethics, 3 credits
    v. Applied statistics II, 3 credits
    vi. Oral communication, 1.5 credits
c) Elective course equivalent to at least 1.5 credits
d) Generic Knowledge and Skills, 12 credits
e) *Course in laboratory animal science (3 credits)*

    The course is compulsory for all doctoral students who use laboratory animals in their thesis project and is to be carried out at the start of doctoral studies (can replace the elective course).

f) Teaching and learning in higher education course

For doctoral students who are going to teach, training in teaching and teaching and learning in higher education equivalent to at least 3 credits (2 full-time weeks) is compulsory.

g) *Seminars*

It is compulsory for both full-time and part-time doctoral students during three years of their doctoral studies to take part in at least 18 seminars in the focus area in question within the subject of medical science. This includes thesis defences, half-time reviews or equivalent. It is mandatory to attend the seminar "Writing a thesis summary". Details of included elements are to be specified in the individual study plan, and participation is reported in the course Generic Knowledge and Skills.

6.3. Half-time review

A half-time review is conducted when half of the time of the doctoral programme has been conducted. The PhD student writes a report of the thesis work, approximately 10-20 pages. This must contain started parts of the thesis summary/kappa such as introduction, background, aims and research questions. Current methods and results as well as planned studies/publications must be summarized under special headings. The text can also be used in the final version of the thesis summary. The report must also include a reflection on ethical considerations, where it is stated for each paper:

- existing ethical permits with registration number
- if ethical permission is planned to be applied for, or
- reasons why ethical approval is not required.

The doctoral student writes a report about the project and presents it at the seminar. A review of the course Generic Knowledge and Skills (Portfolio) is also conducted in connection with the seminar. At the seminar, the doctoral student receives feedback on their progress towards the learning outcomes of the doctoral programme based on the individual study plan and achieved outcomes. The main supervisor is responsible for the half-time review and initiating the process for it to take place.

6.4. Doctoral thesis

The doctoral thesis is to be the equivalent of four years of full-time study (240 credits) including time spent on courses. The thesis is to contain number of articles or manuscripts (papers), as well as an introductory summary and is to demonstrate that the doctoral student has competence corresponding to the learning outcomes of the doctoral programme.

6.4.1. Papers

The scope of the thesis project is a qualitative assessment. The thesis is to be assessed from a perspective based on the doctoral student's programme and maintain a scientific quality that can be expected at an internationally prominent university.

In order for the doctoral student to demonstrate sufficient competence the doctoral student is generally required to have been involved in writing at least three papers, of which one must be published or accepted. The PhD student must be the sole first author on the published paper, as well as having a prominent position on the other papers (the benchmark is first or second author). The PhD student's contribution to the papers must be clearly distinguishable from that of the other authors. Supervisors should not be first author on any of the papers. The research papers are to be of a quality that corresponds to the requirements for publication in recognised international research journals (with peer review methodology).

Other types of paper that can be included in the thesis

- Articles containing original data published in international peer-reviewed journals
- Systematic review according to established methodology and which contains meta-analyses or meta-syntheses. A thesis cannot only include these types of papers.
- Letter to the editor – provided that original data is presented. It cannot replace the paper for which the doctoral student is the sole first author.
- Study protocol – provided that the protocol is clearly linked to the other research papers. It cannot replace the paper for which the doctoral student is the sole first author.

A maximum of one paper/manuscript carried out before admission to the doctoral programme can be included in the thesis and this paper must not have been published more than two years before admission. Any single article should not be included in more than two theses.

Other types of work may be included following individual review by the Research Studies Board.

A review to determine whether these quality requirements are fulfilled is carried out in connection with the thesis defence request. In other cases, the thesis is reviewed by a working group within the Research Studies Board, which can reject the request for a thesis defence. This can occur even though the thesis fulfils the quantitative requirements.

6.4.2. Introductory summary

The introductory summary is to provide an up-to-date description of the subject of the doctoral thesis and how the doctoral project fits into this. The introductory summary is to be written autonomously by the doctoral student and is to present the doctoral student's contribution to the various papers in their shared context. The introductory summary is to demonstrate that the doctoral student has obtained specific subject knowledge. A critical description and discussion of the methods is to be included in which alternative methods are also discussed. The results should be summarised and critically reviewed

in a discussion. The text should integrate obtained results in the current field of research. It is to present what the doctoral thesis has contributed to the subject. The chapter is also to include how the results of the thesis can be utilised as well as a proposal for continued research.

The scope of the introductory summary should be at least 50 pages including figures and tables but excluding front page and references.

6.5. Assessment

For a doctoral degree at the Faculty of Medicine at Lund University it is a requirement that the doctoral student has been admitted for doctoral studies at this faculty and that most of the degree project originates from the Faculty of Medicine at Lund University.

The doctoral student is to have carried out their research assignment in accordance with the individual study plan, which entails that he or she has

- completed and been awarded a grade of Pass in the set compulsory courses and any further courses for the doctoral study programme or focus area stated in the individual study plan
- completed a mid-way review
- been assessed and awarded a grade of Pass for the course Generic Knowledge and Skills
- conducted a public defence with a grade of Pass