



# General syllabus for doctoral studies in medical science

leading to a Degree of Licentiate

*General syllabus for doctoral studies in medical science*

**Scope:** 120 credits

**Degree:** Degree of Licentiate

**Level:** Third cycle

**Established:** Syllabus established by the Faculty of Medicine Board 22 September 2022

**Enters into force:** 1 October 2022

**Responsible body:** Faculty of Medicine

## 1. Subject definition

In this context, medical science is an umbrella term for research aimed at promoting human health and preventing ill health in various ways. The subject encompasses the study of everything from cells to society, such as:

- medically relevant *in vitro* and *in vivo* models with molecular genetic, chemical, cell biological, physiological or pharmacological aspects
- epidemiological studies to understand the prevalence of and explanations for sicknesses and conditions in the population
- development of new diagnostic and treatment methods
- evaluation of preventative and health-promoting interventions as well as implementation of evidence-based knowledge in health care
- professional and organisational development relevant to medical science

After completing the programme, the doctoral student shall have broad knowledge of medical science in general and be prepared for future research and work beyond the individual doctoral project.

## Subject specialisation

For each admitted doctoral student, a subject specialisation in which research is to be conducted must be specified (list of subject specialisations is provided in Annex A). How the doctoral student shall achieve a broad expertise and a systematic understanding of the subject specialisation in question shall be set out in the individual study plan

## 2. Study programme objectives

The study programme is third cycle. Provisions for third-cycle education are found in the Higher Education Act Chapter 1 Section 9a.

The qualitative targets for the Degree of Licentiate can be found in Annex 2 of the Higher Education Ordinance.

The qualitative targets of the Higher Education Regulation are supplemented by local objectives. See Annex B for the qualitative targets and local objectives.



### 3. Entry requirements and prerequisites

To be admitted to third-cycle courses and study programmes the applicant must meet the general and specific entry requirements that the higher education institution may have laid down, and specific entry requirements as described below, and be deemed to have the other skills needed to complete the study programme (Chapter 7 Section 35 Higher Education Ordinance).

#### General entry requirements

Those who have completed a second-cycle degree, completed course requirements of at least 240 credits, of which at least 60 credits at second-cycle level, or who have acquired substantially equivalent knowledge in some other way, in Sweden or abroad, are considered to have satisfied the general entry requirements. The faculty may permit an exemption from the general entry requirements for an individual applicant, if there are special reasons. (Chapter 7 Section 39 Higher Education Ordinance)

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#### Specific entry requirements

In order to meet the entry requirements for third-cycle studies, it is required that the applicant have both the following:

1. necessary knowledge from one or more higher education courses and study programmes or corresponding courses and study programmes assessed as relevant to the area of third-cycle studies. Specific entry requirements for each subject specialisation are specified in a separate syllabus. These syllabi are available at the departments and at the office of the Faculty of Medicine.
2. the necessary written and oral English-language skills. Assessment of these skills is done by having the prospective doctoral student present his/her research plan in English to an assessment group appointed by the head of department.

### 4. Selection

Selection from among candidates who meet the entry requirements will be based on the following criteria:

- Ability to benefit from third-cycle studies

The following assessment criteria shall be applied when assessing the ability to benefit from the studies:

- Written and oral communication skills
- Critical ability
- Analytical ability
- Ability to perform within given timeframes

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

Selection of applicants for third-cycle studies is made by the prospective principal supervisor in consultation with the department's doctoral education team. An assessment of the applicant's ability to carry out third-cycle studies in the relevant subject area is made upon an interview. Thereafter, a compulsory admissions seminar is held in English.

Decisions regarding admission to third-cycle studies leading to a Degree of Licentiate are made in accordance with the faculty's delegation of authority.



## 5. Structure and content

The aim of third-cycle studies at the Faculty of Medicine, Umeå University, is to increase knowledge in the field of medical science and thereby contribute to the development of society.

Third-cycle education at the Faculty of Medicine shall therefore provide a broad base and prepare for future research and work beyond the individual specialist area.

### General

Third-cycle studies that are completed with a Degree of Licentiate comprise an actual period of study of two years, corresponding to a total of 120 credits. The studies consist of a faculty-wide portion and an individual portion. The faculty-wide portion consists of a doctoral programme in medical science comprising 8 credits. Participation in the doctoral programme is compulsory for all doctoral students admitted to third-cycle studies at the Faculty of Medicine as of October 1 2022. The individual portion comprises 112 credits and includes a dissertation project of at least 90 credits and other education components. The Degree of Licentiate requires other education components of a minimum of 15 credits, which means at least 7 credits of optional content in addition to the compulsory doctoral programme (8 credits).

An individual study plan must be drawn up for each doctoral student, containing both the University's and the doctoral student's undertakings and specifying funding, supervision, educational elements within and beyond the doctoral programme, thesis work, etc.

### Doctoral programme

The faculty-wide doctoral programme of 8 credits is taken together with doctoral students whose studies lead to Degree of Doctor, and starts every autumn and spring semester.

The content of the doctoral programme is based on national and local intended learning outcomes. The programme aims to support individual progression towards the qualitative targets, provide opportunities for exchange across disciplines and departments, and promote third-cycle education on equal terms.

### Structure of the doctoral programme

Programme activities take place at *cohort* and *base-group level*.

- The *cohort level* corresponds to doctoral students admitted to the programme in the same semester and who are followed during the course of the programme. The activities at the cohort level consist mainly of compulsory courses according to the programme schedule. The cohort level provides a knowledge base of generic knowledge and skills and common perspectives for all doctoral students.
- The *base-group level* consists of smaller groups of doctoral students within the same cohort who, like the cohort, are tracked throughout the programme. The base-group level provides a concrete platform for interdisciplinary exchange. The base-group meetings take place every semester according to a flexible schedule and are held in seminar form with a predetermined content for each meeting.



## Content of the doctoral programme

The following compulsory components are included in the doctoral programme (8 credits in total):

<b>Cohort level: joint courses</b>	<b>Credits</b>
Semester 1: Common bases for science and research	4
Semester 2: Research ethics	2
<b>Total</b>	<b>6 credits</b>

<b>Base-group level: base-group meetings</b>	<b>Credits</b>
Semester 1: 1-2 meetings	0.5
Semester 2: 3-6 meetings	1.5
<b>Total</b>	<b>2 credits</b>

## Other compulsory components

Credit-bearing components comprising at least 7 credits in addition to the doctoral programme are required to achieve 15 credits in total. The following components are compulsory:

- Presentation at at least one national/international conference (1.5 credits), applies to all doctoral students
- Course in laboratory animal science, if research with laboratory animals is part of the thesis project
- Course in Good Clinical Practice (GCP), on clinical human research included in the thesis project
- Course in statistics, if statistical analysis is part of the thesis project
- Course in qualitative methods, if qualitative analysis is part of the thesis project

In order to achieve the individual intended learning outcomes, additional subject-specific study components may be required, such as elective third-cycle courses, active participation in departmental seminars and journal clubs (max 3.5 credits), additional presentation at national/international conference, research visits at another university or participation in higher education teaching-and-learning training. Decisions on subject-specific study components are made in consultation between the doctoral student, supervisor and examiner and are documented in the individual study plan.

Requests for credit transfer of compulsory courses must be made prior to admission to third-cycle studies and must be submitted directly to the Faculty's Director of Studies. Certificates from previous studies and their syllabi must be attached.

## 6. Follow-up

The Faculty of Medicine has overall responsibility for doctoral education, while the department where the doctoral student is admitted is responsible for the individual doctoral student's education.

The doctoral student's education and progression is regularly followed up through an annual follow-up of the individual study plan. An annual follow-up must be carried out regardless of the scope of the third-cycle studies.



## 7. Licentiate thesis

The licentiate thesis can be written either as a compilation thesis or as a monograph thesis and must comprise at least 90 credits.

A compilation thesis is based on scientific essays and contains an introductory chapter with an introduction, a description of the methodology, a summary discussion, a concluding discussion/reflection including a research ethics assessment, and a statement of the benefits of the paper to the research community, and to society in general. The doctoral student must write the introductory chapter independently. A compilation thesis normally consists of 2 scientific papers. The scope and quality of the papers must ensure that the established qualitative targets are met.

The doctoral student's contribution must be clearly discernible and must constitute a significant part of the work performed, across all compiled papers. At the licentiate seminar, at least one paper must have been accepted for publication in an international peer-reviewed journal.

A monograph thesis is a coherent, unified work of scholarship.

A preliminary review is carried out by two reviewers if the thesis is a monograph or if none of the licentiate's papers has been accepted or published.

## 8. Summative assessment

The Degree of Licentiate is awarded after the doctoral student has completed third-cycle studies of 120 credits in accordance with this programme syllabus and has received a passing grade in the assessment components included in the programme and has written and defended a doctoral thesis approved by the examining committee at a public defence.

## 9. Provisional regulations

Doctoral students admitted before 2022-10-01 complete their studies pursuant to the general syllabus (FS 4.1.4-1421-15) valid until 2022-09-30.

## 10. Other instructions

The current regulations regarding third-cycle studies are set out in:

- The Higher Education Ordinance (HF): Chapter 5 Employment of doctoral students, etc., Chapter 6 Courses and study programmes, and Chapter 7 Admission to courses and study programmes; Annex 2 System of Qualifications.
- Admission regulations for doctoral education at Umeå University.
- Local degree qualifications at Umeå University.
- Rules for doctoral education at Umeå University.
- Procedure for the withdrawal of resources from doctoral students at Umeå University
- Other relevant information about third-cycle education available on the Faculty of Medicine's internal website.



## Annex A Doctoral subject specialisations in medical science

<b>SUBJECT SPECIALISATION</b>	<b>DEPARTMENT</b>
Family Medicine	Public Health and Clinical Medicine
Family Medicine and Epidemiology	Public Health and Clinical Medicine
Anatomy	Integrative Medical Biology
Anaesthesiology	Surgical and Perioperative Sciences
Angiology	Public Health and Clinical Medicine
Occupational Therapy	Community Medicine and Rehabilitation
Child and Adolescent Psychiatry	Clinical Sciences
Diagnostic Radiology	Radiation Sciences
Bioinformatics	Clinical Microbiology
Biomaterial	Odontology
Biomedical Laboratory Sciences	Clinical Microbiology Cell
Biology	Integrative Medical Biology
Dermatology and Venereal Diseases	Public Health and Clinical Medicine
Endodontics	Odontology
Epidemiology and Public Health	Epidemiology and Global Health
Pharmacology	Integrative Medical Biology
Public Health	Epidemiology and Global Health
Physiology	Integrative Medical Biology
Physiological Chemistry	Medical Biosciences
Physiotherapy	Community Medicine and Rehabilitation
Gastroenterology and Hepatology	Public Health and Clinical Medicine
Geriatrics	Community Medicine and Rehabilitation
Global Health	Epidemiology and Global Health
Gynaecological Oncology	Radiation Sciences
Hand Surgery	Surgical and Perioperative Sciences
Haematology	Radiation Sciences
Histology with Cell Biology	Integrative Medical Biology
Sports Medicine	Community Medicine and Rehabilitation
Immunology	Clinical Microbiology
Infection Epidemiology	Clinical Microbiology
Infectious Diseases	Clinical Microbiology
Cardiology	Public Health and Clinical Medicine
Cariology	Odontology
Surgery	Surgical and Perioperative Sciences
Clinical Bacteriology	Clinical Microbiology
Clinical Pharmacology	Integrative Medical Biology
Clinical Physiology	Surgical and Perioperative Sciences
Clinical Immunology	Clinical Microbiology
Clinical Chemistry	Medical Biosciences
Clinical Microbiology	Clinical Microbiology
Clinical Neurophysiology	Integrative Medical Biology
Clinical Oral Physiology	Odontology



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Cognitive Neuroscience	Integrative Medical Biology
Oral Surgery	Odontology
Speech Therapy	Clinical Science
Pulmonary Medicine	Public Health and Clinical Medicine
Medicine	Public Health and Clinical Medicine
Medical Biophysics	Medical Chemistry and Biophysics
Medical Genetics	Medical Biosciences
Medical Chemistry	Medical Chemistry and Biophysics
Medical Psychology	Clinical Science
Medical Engineering	Radiation Sciences
Molecular Biology	Molecular Biology/UCMM
Molecular Medicine	UCMM
Neurosurgery	Clinical Science
Neurology	Clinical Science
Obstetrics and Gynecology	Clinical Science
Ophthalmology	Clinical Science
Nursing	Nursing
Oncology	Radiation Sciences
Oral Cell Biology	Odontology
Oral Diagnostic Radiology	Odontology
Oral Health	Odontology
Oral Medicine	Odontology
Oral Microbiology	Odontology
Orthodontics	Odontology
Orthopaedics	Surgical and Perioperative Sciences
Periodontology	Odontology
Pathology	Medical Biosciences
Paediatrics	Clinical science
Paediatric Odontology	Odontology
Plastic Surgery	Surgical and Perioperative Sciences
Professional Development	Clinical Science
Prosthodontics	Odontology
Psychiatry	Clinical Science
Radiophysics	Radiation Sciences
Radiography	Nursing
Rehabilitation Medicine	Community Medicine and Rehabilitation
Rheumatology	Public Health and Clinical Medicine
Forensic Medicine	Community Medicine and Rehabilitation
Sexual and Reproductive Health	Nursing
Social Medicine	Public Health and Clinical Medicine
Urology	Surgical and Perioperative Sciences
Virology	Clinical Microbiology
Occupational and Environmental Medicine	Public Health and Clinical Medicine
Otorhinolaryngology (ENT)	Clinical Science





## Annex B Degree objectives

### Qualitative targets

(The Higher Education Ordinance, Chapter 6, Sections 4 and 5; Annex 2)

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

**For a Degree of Licentiate the third-cycle student shall**

- **demonstrate knowledge and understanding in the field of research including current specialist knowledge in a limited area of this field as well as specialised knowledge of research methodology in general and the methods of the specific field of research in particular.**

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

**For a Degree of Licentiate the third-cycle student shall**

- **demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge as well as to evaluate this work;**
- **demonstrate the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and society in general, and**
- **demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.**

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

**For a Degree of Licentiate the third-cycle student shall**

- **demonstrate the ability to make assessments of ethical aspects of his or her own research**
- **demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and**
- **demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.**





## Local degree objectives

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

**For a Degree of Licentiate the third-cycle student shall**

- **demonstrate knowledge of the theory of science in general and of medical science in particular**

### ***Skills and abilities***

**For a Degree of Licentiate the third-cycle student shall**

- **demonstrate the ability to relate their own research to other ongoing medical research and, by extension, to clinical application and other societal benefits**

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

**For a Degree of Licentiate the third-cycle student shall**

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