



GENERAL SYLLABUS FOR EDUCATION AT THIRD-CYCLE LEVEL

IN

EXPLORATION GEOPHYSICS

TFN Chair 2014-02-26

1 Subject Area

Exploration geophysics is a subject based on the laws and methods of physics, which in combination with geological information can be used to locate natural resources such as mineral deposits, hydrocarbon and water. The focus of research is on the development of geophysical methods for exploration of mineral deposits.

2 Programme curriculum

Education at third-cycle level in Exploration geophysics that concludes with a Degree of Licentiate comprises a total of two years' full time study (120 credits) and consists of a study programme that gives 30 credits and a licentiate thesis that gives 90 credits.

Education at third-cycle level in Exploration geophysics that concludes with a Degree of Doctor comprises a total of four years' full time study (240 credits) and consists of a study programme that gives 60 credits and a doctoral thesis that gives 180 credits.

The education normally comprises 80% full-time study and 20% departmental duties that usually involve teaching at both basic and advanced level. The education consists of research work for the academic thesis and courses oriented towards the specific area of specialisation of the thesis. Pedagogical education is required to carry out the departmental duties. The research is communicated to the scientific community and the rest of society through scientific articles, participation in conferences and participation in national and international collaborative projects. During the period of study the doctoral student's progress and development in the scientific research project are communicated to the doctoral student's appointed supervisor.

An individual study plan is drawn up for every third-cycle student (according to a fixed model) where the study programme is specified in detail. The individual study plan is followed up at least twice a year by the third-cycle student and his/her supervisor and is approved by the Head of Department at least once a year, as delegated by the Vice-Chancellor.

3 Eligibility and selection

3.1 General eligibility requirements

An individual fulfils the general eligibility requirements for the third-cycle educational programme when he or she 1) has completed a second-cycle degree, 2) has completed higher education courses worth at least 240 credits, of which at least 60 are for second-cycle courses, or 3) in some other manner, in this country or abroad, has acquired the equivalent qualifications. The faculty board may permit an exemption from the requirement of basic eligibility in the case of an individual applicant, if there are special grounds Chapter 7, Section



39 of the Higher Education Ordinance (2010:1064). Also refer to the local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

3.2 Specific eligibility requirements

First-cycle qualification with main subject/main field of study in Geosciences/Natural Resources Technology, 60 credits/90 higher education credits.

For applicants who achieved basic eligibility before 1 July 2007: Degree of Master of Science.

Good skills in oral and written communication in Swedish or English.

3.3 Selection

Selection among applicants complying with requirements shall be made with reference to their ability to benefit from the education. The mere fact that an applicant is deemed able to receive credit towards the education for previous education or working activities may not alone give the applicant precedence over other applicants in the selection process, Chapter 7, Section 41 of the Higher Education Ordinance (2010:1064). Also refer to local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

In the selection of third-cycle education in Exploration geophysics the following applies to the selection criteria:

- Knowledge relevant to the specific project
- The quality of the applicant's degree project.

4 Examinations included in the education

The education consists of courses and an academic thesis. Examinations included in third-cycle programmes are graded Pass or Fail. Course and licentiate thesis grades are decided by specially appointed university teachers (examiners). Doctoral thesis grades are decided by a specially appointed grading committee.

4.1 Courses

Goal attainment is tested by means of the form of examination specified in the syllabus.

4.1.1 Recognition of prior studies

As specified in the local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

4.2 Academic thesis

An academic project in the form of a dissertation/thesis in (*state subject*) shall be presented as a homogenous, cohesive academic work (monograph) or a brief summary – comprehensive summary – of academic essays (composite thesis) that the third-cycle student has written alone or together with another person or persons.

Thesis manuscripts shall be presented at one or more research seminars or be subjected to equivalent review through the agency of the department.



The licentiate thesis is defended orally at a public licentiate seminar and is graded Pass or Fail. When the thesis is graded both the content of the thesis and the defence of the thesis are taken into consideration. The grade of a licentiate thesis is decided by an examiner appointed by the Head of Department.

The doctoral thesis is defended orally at a public disputation and is graded Pass or Fail. When the thesis is graded, both the content of the thesis and the defence of the thesis are taken into consideration. Grades for a doctoral thesis should be decided by a grading committee that is appointed for each thesis.

5 Degree

In Exploration geophysics a third-cycle student who has been admitted to a Degree of Doctor has the possibility to take a Degree of Licentiate after completing one part comprising at least 120 credits of a study programme intended to conclude with the award of a Degree of Doctor.

5.1 Degree objectives

As specified in the Qualifications Ordinance (Higher Education Ordinance, Annex 2 – Degree Ordinance). See also the Annex below.

5.2 Degree title

A third-cycle student who takes a Degree of Licentiate in Exploration geophysics receives the degree title of Licentiate of Engineering.

A third-cycle student who takes a Degree of doctor in Exploration geophysics normally receives the degree title of Doctor of Philosophy.

Requests for other degree titles are made according to established guidelines.

6 Entry into effect

General syllabus for Exploration geophysics applies for admission of third-cycle students admitted 2014-02-01 and later.



Qualifications ordinance (Higher Education Ordinance, Annex 2)

Contents

the qualifications that may be awarded in the third cycles, and
the requirements to be fulfilled for the award of each qualification (qualification descriptors).

THIRD-CYCLE QUALIFICATIONS

General qualifications

Degree of Licentiate [Licentiatexamen]

Scope

A Degree of Licentiate is awarded

either after a third-cycle student has completed a study programme of at least 120 credits in a subject in which third-cycle teaching is offered,

or after a third-cycle student has completed one part comprising at least 120 credits of a study programme intended to conclude with the award of a Degree of Doctor, if a higher education institution decides that a licentiate of this kind may be awarded at the institution.

Outcomes

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 skills 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 skills 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 skills 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 skills to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Thesis

For a Degree of Licentiate the third-cycle student shall have been awarded a Pass grade for a research thesis of at least 60 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Licentiate with a defined specialisation.

Degree of doctor

Scope

A Degree of Doctor is awarded after the third-cycle student has completed a study programme of at least 240 credits in a subject in which third-cycle teaching is offered.

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 research methodology in general and the methods of the specific field of research in particular.
- demonstrate the capacity for scholarly analysis and synthesis as well as review and assess new and complex phenomena, issues and situations autonomously and critically
- demonstrate the skills to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other advanced tasks within predetermined time frames and to review and evaluate such work
- demonstrate through a dissertation the skills to make a significant contribution to the formation of knowledge through his or her own research



- demonstrate the skills 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 skills 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.

Research thesis (doctoral thesis)

For the Degree of Doctor the third-cycle student shall have been awarded a Pass grade for a research thesis (doctoral thesis) of at least 120 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Doctor with a defined specialisation. Ordinance (2008:132)