THE FACULTY OF ARTS

Dnr: U 2016/663

General Syllabus for Degree of Doctor in Computational Linguistics

The syllabus was confirmed by the Faculty Board of Arts at Gothenburg University on 17 November 2016. It is complemented with the following documents, available via the website of the Faculty of Arts (*www.hum.gu.se*).

Instructions for Third-cycle Studies at the Faculty of Arts.

See *Rules and Regulations for Third-cycle Studies at the University of Gothenburg – Rules for Doctoral Students* for university-wide rules for third-cycle studies.

Title of qualification and teaching and research duties

PhD in Computational Linguistics

Computational linguistics is the application of computational methods to the representation and processing of natural language.

1. Objectives

1.1 General national objectives

According to the Qualifications Ordinance, Appendix 2 of the Higher Education Ordinance, the objectives for the Degree of Doctor are as follows:

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.

Competence and skills

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

– 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 thesis their ability to make a significant contribution to the formation of knowledge through their 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 at large,

– 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 other qualified professional contexts.

Judgment 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.

1.2 Subject-specific and supplementary objectives

Knowledge and understanding
The student will demonstrate mastery of the current issues in computational linguistics and natural language processing. He/she will acquire a full understanding of the methods used to model natural language formally, and the theoretical ideas that provide the foundation for natural language technology.

Competence and skills
The student will learn to conduct experiments in computational modelling of linguistic properties, and to design and implement complex natural language processing systems. These skills will equip him/her for a research and teaching at an institution of higher education, or a career in research and development in industry.

Judgment and approach
The student will acquire an advanced critical appreciation of the interdisciplinary nature of computational linguistics, which is emerging at the interface of science, the humanities, and engineering. He/she will be cognisant of the potential that language technology offers for economic development, and aware of the social challenges that this technology poses.

2. Entry requirements

Admission to the programme requires that the applicant fulfils the general and specific entry requirements provided in Chapter 7 of the Higher Education Ordinance.

2.1 General entry requirements

A person meets the general entry requirements under Chapter 7, Section 39 of the Higher Education Ordinance if he or she:

1. has been awarded a second-cycle qualification, or

2. has satisfied the requirements for courses comprising at least 240 higher education credits of which at least 60 higher education credits were awarded in the second-cycle, or

3. has acquired substantially equivalent knowledge in some other way in Sweden or abroad.

2.2 Specific entry requirements

Admission to the third-cycle programme in Computational Linguistics requires

2.2.1

a. At least 30 credits from second-cycle courses in subject area 1 (Computational Linguistics, Language Technology, or Natural Language Processing), including a thesis of at least 15 credits, or equivalent qualifications,

   or

b. At least 30 credits from second-cycle courses in subject area 2 (Linguistics or Cognitive Science), including a thesis of at least 15 credits, plus at least 30 credits from first or second level courses in subject area 1 (Computational Linguistics, Language Technology, or Natural Language Processing) or subject area 3 (Computer Science, Logic, or Mathematics), or equivalent qualifications

   or

c. At least 30 credits from second-cycle courses in subject area 3 (Computer Science, Logic or Mathematics), including a thesis of at least 15 credits, plus at least 30 credits from first or second-level courses in subject area 2 (Linguistics or Cognitive Science) or subject area 1 (Computational Linguistics, Language Technology, or Natural Language Processing), or equivalent qualifications.

2.2.2. The English skills needed to be able to benefit from compulsory parts of the course and to be able to actively participate in seminars and similar activities.

3. Admission and selection

Admission to third-cycle studies in Computational Linguistics is normally initiated by the Department announcing a call for doctoral studentships. Admission is conditional upon the studies being properly funded.

In selecting between applicants, their ability to benefit from the course or study programme shall be taken into account in accordance with Chapter 7 of the Higher Education Ordinance.

To facilitate the selection process, the applicant must submit, for example, the following:

1. Master thesis, course work, published papers, project work or equivalent. These are assessed on the basis of scientific quality, creativity, and intrinsic research interest.

2. A project draft of up to 4000 words in which the applicant stipulates a research domain that he/she would like to develop, justifies its relevance and discusses which theories, methods and materials would be relevant. The project draft should also provide supporting information for assessing the Department's supervisor competence within the research domain stipulated. The project draft is assessed on the basis of the following criteria: scientific quality, relevance to the PhD programme, and availability of a suitable supervisor within the programme.

Admission and selection are also conditional on the Department's supervisory resources within the doctoral student's research focus. Admission may also include an interview in addition to a review of qualifications submitted. Admission decisions are made by the Head of Department following preparation at the Department.

4. Programme disposition and content

The third-cycle programme in Computational Linguistics comprises 240 higher education credits and leads to a Degree of Doctor. There is the option to obtain a Degree of Licentiate after 120 higher education credits providing the requirements specified in the general syllabus for a Licentiate degree in Computational Linguistics are fulfilled.

The third-cycle programme consists partly of courses, which are examined incrementally, and partly of own research work, which is to lead to a scholarly thesis.

The student shall participate in seminar activities within the confines of her or his education. The doctoral student shall also participate in Department-wide activities, unless there are special reasons.

4.1 Courses

The programme consists of a course part comprising 60 higher education credits (HECs).

4.1.1 The student will take at least 7.5 HECs in each of the following three topic areas.

1. Computational linguistics/Natural language processing (7.5 HECs), e.g.
   the PhD version of the Master in Language Technology (MLT) course Natural Language Processing (NLP), Computational Semantics, Computational Syntax, or the Swedish course NLP Theory and Method

2. Statistical modelling and machine learning (7.5 HECs), e.g.
   the PhD version of the MLT courses Statistical Methods for NLP, or
   Machine Learning for NLP

3. Theoretical linguistics (7.5 HEC), e.g.
   Linguistics courses in phonetics and phonology; Linguistics courses in syntax;

the PhD version of the MLT course Computational Syntax;
courses in construction grammar, GF, semantics,
or formal semantics; a course in the application of type theory to natural
language semantics; the PhD version of the MLT course Dialogue Systems 2,
the PhD version of the MLT course Embodied and Situated Language Processing; or the Swedish course The Swedish course Linguistic Theory and Method

4.1.2 The student will also take the obligatory GU Pedagogy and Teaching course (5 HECs), and the Linguistics Ethics of Research course (2.5 HECs).

4.1.3 In addition, the student will take 30 HEC credits of elective courses which he/she will select in consultation with his/her supervisor.

If a doctoral student requests credit transfer from previous education, this shall be specified in the individual study plan (see 6.1).

4.2 Doctoral thesis

The doctoral thesis comprises 180 higher education credits. It can be designed as a monograph or a compilation thesis. A licentiate thesis can be included as part of a doctoral thesis, in a revised or unaltered form.

The doctoral student is expected to provide regular reports on her or his thesis work. This obligation is primarily fulfilled through presentation at Department seminars. In addition, the student is expected to attend scientific conferences relevant to his/her research, and to submit papers to some of these conferences.

For more information, see *Instructions for Third-cycle Studies at the Faculty of Arts*.

The doctoral thesis is defended at a public defence seminar. Both the content and defence are considered in the assessment of the thesis. The thesis is graded with one of the grades Pass or Fail.

5. Supervision

At least two supervisors shall be appointed for each doctoral student: one principal supervisor and one assistant supervisor. At least one of the supervisors must be employed at the University of Gothenburg, normally at the doctoral student's home Department. At least one of the supervisors must be qualified for appointment to a readership (Docent) and at least one of the supervisors must have completed supervisor training.

The doctoral student is entitled to supervision at least as stipulated by the standard adopted by the Faculty Board (see *Instructions for Third-cycle Studies at the Faculty of Arts*).

A doctoral student who so requests is entitled to change supervisors.

6. Individual study plan

An electronic individual study plan, which shall be finalised by no later than two months after commencement of studies, shall be drawn up by the doctoral student and supervisor, in consultation with the doctoral examiner, in connection with admission.

The individual study plan shall be reviewed at least once a year. The review shall clearly identify the doctoral student's progression.

6.1 Credit transfer

When the individual study plan has been established, the doctoral student may request that credits be transferred from past successfully completed second- or third-cycle education. Credits applied to fulfil the general or specific entry requirements may not also be applied towards the third-cycle degree, but must be replaced with another course. In addition, the following applies:

(i) A doctoral student who has successfully completed a second-cycle course that is included as a compulsory or elective course at third-cycle level may request that the course be replaced with another course of the same extent in the individual study plan. This does not affect the duration of the programme for the Degree of Doctor.

(ii) A doctoral student who has completed part of her or his third-cycle education while he or she was enrolled as a third-cycle student at another higher education institution or in another subject may request that the part be applied directly to her or his degree without replacements. This reduces the duration of the study programme for a Degree of Doctor in proportion to the credits transferred.

6.2 Timetable and funding plan

The individual study plan shall include a timetable and associated funding plan for the entire period of study, up to the planned date for public defence of the thesis.

7. Transitional provisions

Doctoral students admitted before 1 January 2016 may, following consultation with supervisors and the doctoral examiner, request permission from the Head of Department to transfer this programme syllabus. The individual plan must then be updated.