



Ref. no.: **GU 2019/2708**

General syllabus for Degree of Doctor in Natural Language Processing

The syllabus was confirmed by the Faculty Board of Humanities at the University of Gothenburg on 17 December 2019. It is complemented with the following documents, available via the website of the Faculty of Humanities.

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

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

Title of qualification: Doctor of Philosophy in Natural Language Processing. Natural language processing is a subject within the broader research field of language technology, which is of growing importance to modern society. The subject encompasses many different areas of inquiry and numerous specialisations, and common to all is a focus on the development and use of linguistic resources, in particular corpus and lexical resources, as well as the associated language technology tools. The overarching goal of the third-cycle programme in natural language processing is for the doctoral students to acquire a deeper understanding of linguistic methodologies and theories, practical knowledge of the subject and extensive experience of analysing and exploring areas of inquiry related to linguistic resources and language technology tools.

After completing their studies, the doctoral student will be able to work as a researcher and academic teacher in natural language processing (linguistic data processing, language technology), as well as within professions involving research and development in language technology within the public sector or industry.

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 area of research in particular.

Skills and abilities

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.

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.

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 natural language processing requires the following:

1. at least 30 higher education credits at a second-cycle level in language technology or linguistic data processing, at least 15 of which must be from a degree project, or equivalent knowledge;

or

2. at least 30 higher education credits at a second-cycle level within linguistics, at least 15 of which must be from a degree project, and at least 30 higher education credits at a first-cycle level in language technology, linguistic data processing or computer science, or equivalent knowledge;

or

3. at least 30 higher education credits at a second-cycle level within computer science, at least 15 of which must be from a degree project, and at least 30 higher education credits at a first-cycle level in general computer science or linguistics, or equivalent knowledge.

The applicant must also have the level of Swedish and English language proficiency 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

3. Admission and selection

Admission to third-cycle studies in natural language processing 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:

1. Academic papers, such as theses, degree projects and any publications. These are assessed based on the following criteria: (a) demonstrated ability to conduct inquiries within linguistics, natural language processing, or computer science; and (b) demonstrated ability of critical assessment and scientific argumentation.

2. A project draft encompassing three to seven pages in which the applicant describes in greater detail one of their preferred research areas, justifies its relevance and discusses which theories, methods and materials would be relevant to a project based on the theme and spanning several years. The project draft, together with the academic papers listed under 1 above, is to be considered a work sample. The draft is assessed on the basis of the following criteria: (a) knowledge of relevant and current research in the domain; (b) how well the intended inquiry relates to current research in the domain; (c) whether the described methods for gathering and analysing data are adequate; and (d) whether the draft describes a research task with a suitable level of ambition to be completed within the confines of a third-cycle programme.

Of these two forms of documentation, the academic papers will be given most weight in the assessment.

Admission may also include an interview in addition to a review of qualifications submitted. Admission and selection are conditional on the availability of suitable supervisory resources within the Department, which is assessed on the basis of the applicant's interests and potential, as presented in the application for admission. Admission decisions are made by the Head of Department following preparation at the Department.

4. Programme disposition and content

The third-cycle programme in natural language processing comprises 240 higher education credits and leads to a Degree of Doctor. There is an option to obtain a Degree of Licentiate after 120 higher education credits providing the requirements specified in the General syllabus for Degree of Licentiate in Natural Language Processing 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 not to.

4.1 Courses

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

The course part includes the compulsory course Teaching and Learning in Higher Education 1: Basic Course, 5 credits (HPE101).

Other courses (55 credits) are determined in consultation with the student's supervisor and doctoral examiner. The course part of the third-cycle programme is intended to provide both breadth and depth and as such normally ought to include more general courses in both linguistics and computer science, as well as more specialised courses related to the doctoral student's research focus. The course part also ought to include elements – courses or course components – addressing research ethics and ethical aspects of natural language processing.

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

4.2 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.

The following seminars are recommended for all doctoral students:

- *Idea seminar* (during the first year of study): research task presented
- *Planning seminar* (about midway through programme): background, material, method and any preliminary results presented
- *Closing seminar* (about six months before planned thesis defence): draft copies of all chapters shall be available to enable an overall assessment; external reviewer invited to attend.

The doctoral thesis shall be 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.

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

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 Humanities*).

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 counted towards the third-cycle degree; instead, they 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 scope 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 this 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. Transition provision

Doctoral students admitted prior to 1 December 2019 can, following consultation with their supervisor and doctoral examiner, submit a request to the Head of Department to transition to this syllabus. The individual study plan shall then be updated.