

General syllabus for third-cycle study programmes in Natural Language Processing

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Executing officer	Ulrika Josefsson
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Summary	The syllabus describes the objectives, content and examination of the study programme as well as admission and selection.
Translation	This document is a translation of the Swedish original. In the event of problems of interpretation or differences between the Swedish and English text, the Swedish text which constitutes the basis of the information, shall always take precedence

Name of degree and subject area description

Title of qualification: Doctor of Philosophy in Natural Language Processing and Licentiate of Philosophy in Natural Language Processing, respectively. 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.

General national outcomes for Degree of Doctor

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

- Demonstrate broad knowledge in and a systematic understanding of the field of research as well as in-depth and up-to-date specialist knowledge within a defined area of the field of research, and
- Demonstrate familiarity with scientific method in general and with the specific methods used in the field of research in particular.
- Demonstrate an ability to scientifically analyse and synthesise and to independently and critically evaluate and assess new and complex phenomena, issues and situations
- Demonstrate an ability to critically, independently, creatively and with scholarly thoroughness, identify and formulate research questions as well as to plan and conduct research and perform other qualified tasks using appropriate methods within specified time limits and to review and assess such work
- Demonstrate through a dissertation the 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 in general
- Demonstrate an ability to identify needs for additional 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
- 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.

General national outcomes for Degree of Licentiate

According to the Qualifications Ordinance for the Degree of Licentiate in the Higher Education Ordinance, Appendix 2, the outcomes for the Degree of Licentiate are as follows:

- 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
- 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
- Demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity
- Demonstrate the ability to make assessments of ethical aspects of their 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 their ongoing learning.

Entry and admission requirements

In order to be admitted to the study programme, the applicant must fulfil the general entry requirements and specific entry requirements in accordance with Chapter 7 of the Higher Education Ordinance.

According to the Higher Education Ordinance Chapter 7 Section 39, a person meets the general entry requirements for third-cycle courses and study programmes if they:

1. have been awarded a second-cycle qualification, or
2. have satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second-cycle, or
3. have acquired substantially equivalent knowledge in some other way in Sweden or abroad.

To be admitted to doctoral education in Natural Language Processing, in addition to general entry requirements, the following is required:

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 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.

Admission and selection

Admission to doctoral education in Natural Language Processing normally occurs in connection with the Department's advertising of doctoral positions. For admission, funding for the applicant's doctoral studies must be secured.

According to Chapter 7 Section 41 of the Higher Education Ordinance, the selection shall take into account the ability of the applicants to benefit from the course or study programme. The applicant must attach the following as grounds for this selection:

1. Essays, independent projects (degree projects) and publications, if any. These are assessed on the basis of 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 outline encompassing three to seven pages in which the applicant specifies a research area that they would like to develop, justifies its relevance and discusses which theories, methods and materials may be used. The project outline, together with the academic papers listed under 1 above, is to be considered a work sample. The project outline 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.

Recruitment and selection take into account the Department's supervision resources in the doctoral student's area of research focus. Admission may include interviews in addition to the examination of the qualifications submitted. The decision on admission is made by the Head of Department after preparation at the Department.

Content and structure of the programme

Doctoral education in Natural Language Processing comprises 240 credits for the Degree of Doctor and 120 credits for the Degree of Licentiate.

Third-cycle study programmes include coursework, with each course being examined as it is completed, and the doctoral student's own research project, which leads to a scholarly thesis.

As part of their education, doctoral students are to participate in seminar activities. Doctoral students are also to participate in joint activities within their department unless there are special reasons for not doing so.

The study programme includes a coursework part which in the case of the Degree of Doctor comprises 60 credits, while for the Degree of Licentiate it comprises 40 credits.

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

Other courses (55 credits for the Degree of Doctor and 35 credits for the Degree of Licentiate) 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 would like to transfer credits from previous courses and study programmes, this must be specified in their individual study plan.

The thesis prepared for the Degree of Doctor comprises 180 credits. It may take the form of a monograph or a compilation thesis. A licentiate thesis may form part of a doctoral thesis, in either revised or unrevised form.

The licentiate thesis comprises 80 credits.

The doctoral student is expected to report on their thesis work regularly. In the first instance, this should take place via one of the department's seminars.

The following seminars are recommended for the Degree of Doctor:

- 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.

Further details about this are set out in the Rules for Third-Cycle Education at the Faculty of Humanities.

The doctoral thesis is defended at a public defence. When assessing the thesis, both its content and defence will be taken into consideration. The thesis is assessed using the grades of Pass or Fail.

Licentiate theses are defended at a public seminar. When assessing the Licentiate thesis, both its content and defence will be taken into consideration. The thesis is assessed using the grades of Pass or Fail.

Supervision

For each doctoral student, at least two supervisors are to be appointed, one of which shall be the main supervisor and the other shall be the co-supervisor. At least one of the supervisors is to be employed at the University of Gothenburg, ordinarily in the department in which the doctoral student is placed. At least one of the supervisors must have the qualifications required for appointment as a docent/reader and at least one of the supervisors must have completed a course in doctoral supervision.

The doctoral student is entitled to a level of supervision that is at a minimum in accordance with the standard determined by the Faculty Board (see Rules for Third-Cycle Education at the Faculty of Humanities).

A doctoral student who so requests is to be permitted to change supervisor.

Individual study plan

Upon admission, the doctoral student and their supervisors are to draw up an electronic individual study plan in consultation with the doctoral examiner, which is to be established no later than two months after the commencement of studies.

The individual study plan is to be reviewed at least once each year. This follow-up is to clearly state how the doctoral student is progressing within the programme.

In conjunction with drawing up the individual study plan, the doctoral student is entitled to request the transfer of credits from previously passed second- or third-cycle courses and study programmes. Credits that are counted towards the general or specific entry requirements may not also be counted as credits at third-cycle level and must be replaced by another course. Otherwise, the following options apply.

- A doctoral student who has completed and passed a course at second-cycle level which is included among the compulsory or optional courses at third-cycle level is entitled to request that the course be replaced with another course of the same scope in their individual study plan. This does not impact the programme length for the Degree of Doctor.
- A doctoral student who has completed parts of their doctoral studies while admitted to doctoral education at another higher education institution or in another subject may request that these credits be transferred without being replaced by other courses. This does have an impact on the programme length for the Degree of Doctor, which is reduced to the corresponding extent.

The ISP is to include a timetable with an associated funding plan for the entire study period up until the planned date for the defence of the thesis.

Transitional provisions

Doctoral students admitted prior to 1 December 2019 may, in consultation with their supervisors and doctoral examiner, petition the Head of Department to transfer to this general syllabus.