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## General syllabus for doctoral studies in Innovation Sciences

### Field and subject

#### Field description

Innovation Sciences is a research area that addresses the knowledge and the understanding of the processes and dynamics of innovations to foster and support industry and society in the development of innovation, entrepreneurship and economic development. Innovations are seen in a broader perspective, both as products and processes, services and organisational innovations. More precisely, Innovation Sciences describe, analyse and explain the development and launch of new products and services, new technology, new business models and firms positions in value networks, the establishing of new markets, the growth of new knowledge-intensive industries and, by the renewal of societal functions. Innovation Sciences is a research and teaching area where diverse actors work together around the common phenomenon of innovation. Innovation Sciences is an applied research area where closeness to business practices and empirical phenomena are of central importance.

#### Subject description

Innovation Sciences as a research subject includes the study of how internal and external factors affect innovation processes and how ideas are developed, implemented and used to achieve success in the market and among users. Innovation Sciences is about the development of ideas, the management of innovation and the development processes to achieve the strategic goals desired by industry, or studies of the market or other external conditions regarding contractors', companies', regions' or industries' innovation possibilities.

#### Specialisation: Business Administration

Business administration covers business in a broad sense. The subject includes, among others, disciplines such as marketing, management and organisation, accounting, international business, as well as entrepreneurship. The subject includes the methods and approach to be able to start, run and continuously develop businesses. Business administration is originally an empirically oriented subject that has, over time, developed and now accommodates a multitude of theoretical platforms, different methodological approaches and different approaches.

## **Specialisation: Industrial Management**

Industrial management has a greater emphasis on business concerning technology-based businesses. The focus is often on project management, product development, innovation management, industrial marketing and quality management. Within industrial management, the researchers educational background is usually based on a technical education, such as engineering, but a social science education background (such as, sociology, business administration and economics) is also common. The theoretical basis, research methods and scientific approaches within industrial management, has much in common to business administration and social sciences in general.

## **Eligibility**

### **Basic Eligibility**

Basic eligibility to doctoral education is stated in the Higher Education Ordinance (chapter 7, paragraph 39):

Basic eligibility to education on doctoral level if the prospective student has:

1. Graduated with a master degree,
2. Completed course requirements of at least 240 credits (ECTS), where at least 60 credits (ECTS) at master level, or
3. In some other way, within or outside the country, gained equivalent knowledge to 1) or 2).

The university can give an exception for individual applicants from the requirement of Basic eligibility, if there are special reasons (2010:1064).

### **Special Eligibility**

The Higher Education Ordinance (chapter 7, paragraph 40) stipulates:

The special eligibility requirements that are needed are absolutely necessary for the student to undertake the education programme.

The requirements apply to:

1. knowledge from a university education or an equivalent education.
2. professional experience, and
3. the necessary linguistic skills or other aspects required for the education programme.

To be accepted as a doctoral student in Innovation Sciences, it is required that the student has completed a master degree in a field relevant to the research subject. However, it is possible that the student is required to obtain additional qualifications before starting the programme. The requirements regarding prior knowledge, as stated above, is considered fulfilled in cases where equivalent knowledge has been obtained; either in Sweden or abroad. Good knowledge of English is required both orally and in written communication. Admission to the doctoral programme is done in a continuous manner. The basis for the selection among eligible applicants to the doctoral education is the level of ability to carry out an education at postgraduate level.

## Learning Goals

### **Licentiate degree**

#### **Knowledge and understanding**

For degree of licentiate the doctoral 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 degree of licentiate the doctoral 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 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 degree of licentiate the doctoral 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,
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her on-going learning,

### **Doctoral degree**

#### **Knowledge and understanding**

For the Degree of Doctor the doctoral student shall:

- demonstrate broad knowledge and systematic understanding of the research field as well as advance 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 doctoral 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 dissertation the ability to make a significant contribution to the formation of knowledge through his or her 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 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 some other qualified professional capacity.

### Judgement and approach

For the Degree of Doctor the doctoral 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.

### Overview of the disposition and requirements of the education

Overview of the disposition and requirements of the education	Obligatory courses (credits)	Optional courses (credits)	Thesis (credits)	Sum (credits)
Doctoral degree	34,5	37,5	168	240
Licentiate degree	25	20	75	120

*Table 1. Overview of credits for doctoral degree and licentiate degree.*

### Degree requirements

Education on doctoral level is ended with doctoral degree or licentiate degree. The doctoral student also has the possibility to get a licentiate degree as a partial stage in the education.

### Licentiate degree

For licentiate degree the following is required:

- approved courses of at least 45 credits (ECTS) and
- approved academic papers to the equivalent of at least 75 credits (ECTS).

Academic papers and courses must total together at least 120 credits (ECTS).

## **Courses**

### *Compulsory courses:*

- 7.5 credits Introductory course for doctoral students (includes 3 credits philosophy of science)
- 10 credits Scientific Methods (includes quantitative and qualitative methods)
- 7.5 credits Introduction to Innovation Science

### *Examples of optional courses:*

- International entrepreneurship and marketing
- Classics in Innovation Processes and Business Creation
- Scientific Communication
- Higher seminars in Innovation Sciences

The doctoral student is allowed to choose optional courses freely, after consultation with his or her principal supervisor. Courses can be chosen in the student's area of research and in specialised courses in relation to the student's thesis. Postgraduate courses given outside Halmstad University, at other universities both in Sweden and abroad, can be credited upon approval of the student's principal supervisor.

## **Seminars**

The doctoral student shall, during the time of study, participate actively in seminars. A so-called "RP" seminar (where the student presents his / her plans regarding their scientific thesis) and a final seminar (where the cohesive script is presented) are compulsory. The doctoral student and principal supervisor may agree upon participation of additional seminar(s). The doctoral students shall present their research annually in front of independent researchers, within the research environments seminar series and Ph.D days.

## **Other optional activities**

For participation and presentation of own article in a field of relevance at an international scientific conference, 1 credit (ECTS) is awarded. In total, a maximum of 5 credits (ECTS) can be awarded for conference participation. Conference participation must be planned in advance together with the principal supervisor. It needs to be planned and documented in the course syllabus.

## **Scientific thesis**

The scientific thesis for the licentiate degree comprises of 75 credits (ECTS).

The scientific thesis may be a monograph or a compilation thesis. The compilation thesis consists of at least two papers with a related thesis frame.

Licentiate work shall show that the student can demonstrate the methods and results in a logical and scientific manner. The licentiate thesis and the articles included must meet the requirements for publication in a scientific forum.

The requirement of independent work does not exclude that the scientific thesis / articles can be part of a larger research project.

The thesis is to be defended at a publicly announced seminar. The thesis will be graded either Pass or Fail.

When grading, both the content of the work and the defence of the thesis will be taken into account. The thesis is graded by the Examiner. The purpose of doctoral education courses is that the student shall acquire the wide and specialised knowledge as stated earlier.

### **Doctoral degree**

For a doctoral degree the following is required:

- approved courses of at least 75 credits (ECTS) and
- approved scientific thesis to the equivalent of at least 168 credits (ECTS).

Thesis and courses must total together at least 240 credits (ECTS).

### **Courses**

*Compulsory courses:*

- 7.5 credits Introductory Course for doctoral students (includes 3 credits philosophy of science)
- 15 credits: Scientific Methods (includes quantitative and qualitative methods)
- 4.5 credits Scientific Theory
- 7.5 credits Innovation Science

*Optional courses:*

- International Entrepreneurship and Marketing
- Classics in Innovation Processes and Business Creation
- Scientific Communication
- Higher seminars in Innovation Sciences

The doctoral student is allowed to choose freely, after consultation with their supervisor, which courses to take. These courses can be chosen in the student's area of research and in specialised courses in relation to the student's scientific thesis. Postgraduate courses given outside Halmstad University, at other universities both in Sweden and abroad, can be credited upon approval of the student's supervisor.

### **Seminars**

The doctoral student shall, during the time of study, participate actively in seminars. A so-called "RP" seminar (where the student presents his / her plans regarding their scientific thesis) and a final seminar (where the cohesive script is presented) are compulsory. The doctoral student and principal supervisor may agree upon participation of additional seminar(s). The doctoral students shall present their research annually in front of independent researchers, within the research environments seminar series and Ph.D days.

### **Other optional activities**

For participation and presentation of own article in a field of relevance at an international scientific conference, 1 credit (ECTS) is awarded. In total, a maximum of 5 credits (ECTS) can be awarded for conference participation. Conference participation must be planned in advance together with the principal supervisor. It needs to be planned and documented in the course syllabus.

## Scientific Thesis

The scientific thesis for the doctoral degree comprises of 165 credits (ECTS). The scientific thesis is the most important part of the education and based on independent scientific research. The scientific thesis may be a monograph or a compilation thesis in a field concerning innovation science. Furthermore, the thesis shall be written in accordance to the rules and guidelines stated by the Higher Education Ordinance. An examining committee grades the thesis.

The requirement of independent work does not exclude that the scientific thesis can be part of a larger research project.

If the thesis is written in English, a Swedish summary needs to be included and if the thesis is written in Swedish, an English summary needs to be included.

## Degree title

After completed education a degree certificate is awarded (after application) with the following degree title:

### Licentiate degree

Ekonomie, Filosofie *eller* Teknologie  
licentiatexamen inom ämnet  
Innovationsvetenskap,  
inriktning  
-Företagsekonomi  
-Industriell organisation

Degree of Licentiate of Science in Business and  
Economics, Degree of Licentiate of Philosophy *or*  
Degree of Licentiate of Engineering in the subject  
Innovation Sciences, specialisation  
-Business Administration  
-Industrial Management

### Doctoral degree

Ekonomie, Filosofie *eller* Teknologie  
doktorsexamen inom ämnet  
Innovationsvetenskap,  
inriktning  
-Företagsekonomi  
-Industriell organisation

Degree of Doctor of Philosophy in the subject  
Innovation Sciences,  
specialisation  
-Business Administration  
-Industrial Management

## Transition

Doctoral students that have been admitted before the general syllabus is valid may after consultation with the main supervisor and director of studies, request to transition to this syllabus. The individual study plan shall then be updated.