



## General syllabus third-cycle subject

Subject	Adopted	Registration number	Ks-kod
<b>Economics</b>	<b>12 April 2019</b>	<b>V-2019-0411</b>	<b>3.2.3</b>

## General syllabus

**Established by the Faculty Council/Education Committee: 12/04/2019**

*Revised:*

### **The subject's Swedish name and its English translation**

*Also specify if the subject has specialisations.*

Nationalekonomi (Economics)

### **Subject description. The primary programme contents**

The Doctoral Programme in Economics at KTH has applied microeconomics as the main specialisation. Areas of application are studies of technical change, innovation, entrepreneurship, business dynamics, industrial dynamics, financing and sustainable economic development. The programme emphasises theoretical perspectives from contemporary economics and draws on related disciplines such as statistics, but also from sociology and economic geography. The research is conducted mainly on the basis of theoretical approaches with quantitative empirical application.

### **Programme objectives based on the Higher Education Ordinance, Annex 2 Qualifications Ordinance.**

*The doctoral student's individual study plan must be structured so as to guarantee that the qualitative targets in the Higher Education Ordinance and KTH's objectives are attained. The attainment of these objectives shall be evaluated for each individual student. This will be done annually during a follow-up of the individual study plan. Comments will be made regarding the progression relative to the objectives based on the courses included in the programme and the thesis project. Other activities, such as supervision and external activities in line with the third mission shall also be taken into consideration.*

*State programme elements to benefit the attainment of goals under the headings below. Details submitted as an appendix of this syllabus for the subject.*

#### Knowledge and understanding

*For a Degree of Doctor, the doctoral student must*

- demonstrate broad knowledge and systematic understanding of the research domain, as well as advanced and current specialised knowledge in a specific part of the research domain, and*
- demonstrate familiarity with the scientific method in general and the methods employed in the specific research domain in particular.*

These intended learning outcomes are achieved individually by each doctoral student through the following:

- Compulsory courses. The purpose of the examination of doctoral courses is to ensure that each doctoral student has acquired broad knowledge and a systematic understanding of the research domain of economics as well as a comprehensive understanding of the scientific method in general.
- Optional courses. This normally relates to the advanced subject-specific courses that each doctoral student takes to advance within their individual research specialisation and thus

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ensure an in-depth understanding of those parts of the field of economics that are of greatest importance for the doctoral student's thesis project. These courses are identified in consultation between doctoral student and supervisor.

- Progressive seminar treatment of the doctoral student's research. A series of seminars ensures that the doctoral student demonstrates the ability to relate to the wider field of research and place their own research in a scientific context, and the ability to relate to methodological approaches within the disciplinary research domain.
- Examination by thesis. The examination ensures the student's ability to use their own research to significantly contribute to knowledge development within the research domain.

### Skills and abilities, including communication skills

*For a Degree of Doctor, the doctoral student must*

*- demonstrate skills in scientific analysis and synthesis, as well as the ability to independently review and assess new and complex concepts, issues and situations,*

*- demonstrate the ability to critically, independently, creatively and with scientific precision identify and formulate issues, as well as plan and use adequate methods to conduct research and other qualified tasks within given timeframes, as well as reviewing and evaluating such work,*

*- demonstrate the ability to make significant contributions to the development of knowledge through their own research as described in their thesis,*

*- demonstrate the ability to present and discuss research and research results with authority both in writing and verbally in dialogue with the national and international scientific community and society in general,*

*- demonstrate the ability to identify the needs for additional knowledge, and*

*- demonstrate the capacity to contribute to societal development and support others in their learning, both in research and education, as well as other professional contexts.*

These intended learning outcomes are achieved individually by each doctoral student through the following:

- Compulsory courses. The purpose of the examination of compulsory doctoral courses is to ensure that each doctoral student has acquired broad knowledge within the research methodology of economics.
- Optional courses. Through advanced subject-specific courses that each doctoral student takes to advance within their individual research specialisation, it is ensured that the doctoral student develops skills and abilities of particular significance for the thesis project in question. All doctoral students are strongly recommended to, through optional courses, deepen their knowledge within statistical/econometric research methodology and related fields. Furthermore, doctoral students are recommended to take a course in philosophy of science. The choice of courses is determined in consultation between doctoral student and supervisor.
- Progressive seminar treatment of the doctoral student's research. A series of seminars ensures that the doctoral student demonstrates the ability to present and discuss research. In

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addition, doctoral students are expected to present and discuss research at international conferences.

- Examination of thesis. The examination ensures the student's ability to use their own research to significantly contribute to knowledge development within the research domain.

### *Judgement and approach*

*For a Degree of Doctor, the doctoral student must*

*- demonstrate intellectual independence and scientific integrity, as well as the ability to perform ethical research assessments, and*

*- demonstrate in-depth insight regarding scientific possibilities and our responsibility in its application.*

These intended learning outcomes are achieved individually by each doctoral student through the following:

- Optional courses. All doctoral students are strongly recommended to take a course in philosophy of science. The choice of courses is determined in consultation between doctoral student and supervisor.
- This normally relates to the advanced subject-specific courses that each doctoral student takes to advance within their individual research specialisation and thus ensure they acquire specialist knowledge and specialised methodological knowledge. These courses are identified in consultation between doctoral student and supervisor.
- Progressive seminar treatment of the doctoral student's research and participation in international conferences.
- Examination of thesis. The examination ensures the student's capacity for intellectual independence.

### *Sustainable development*

*For a Degree of Doctor, the doctoral student must*

*- demonstrate knowledge and ability to make environmental and ethical assessments in order to contribute to a sustainable societal development.*

These intended learning outcomes are achieved individually as course elements and through participation in the department's seminar activities. These seminars discuss results and experiences from research projects, where environmental and ethical assessments are made. Many of the department's research projects relate to sustainable development, for example, based on resource allocation, innovation or transportation. It is also strongly recommended that doctoral students use their optional courses to develop their ability to analyse the conditions for sustainable development.

## **Specific admission requirements**

*This specifies requirements for subject knowledge and possible language requirements*

Admission to the third-cycle studies in Economics requires the applicant to have completed courses equivalent to at least 60 higher education credits from second-cycle studies or higher within Economics, Industrial economics, Mathematics, Statistics, or other subjects deemed directly relevant

to the specialisation in question. These requirements will also be considered fulfilled by applicants who have acquired the equivalent knowledge through other means.

## Selection criteria

Selection for third-cycle studies is based on the assessed ability to benefit from such studies. The assessment of this ability is primarily based on qualifying education. The following is given particular attention:

1. Knowledge and skills relevant to writing a doctoral thesis on the subject.  
These can be demonstrated through appended documents and a potential interview.
2. Assessed ability to conduct independent work
  - a. ability to formulate and tackle scientific problems.
  - b. ability to communicate verbally and in writing.
  - c. maturity, judgement and the ability to conduct independent critical analysis.Assessment can be based on factors such as a degree project and discussion of said project during a potential interview.

Other experiences relevant to the third-cycle studies, e.g. professional experience.

## Contents and examination of the course component

Third-cycle studies consist of a course component and a thesis component:

- A doctoral degree requires 240 credits, of which the thesis component comprises 135 credits and the course component comprises 105 credits.
- A licentiate degree requires 120 credits, of which the thesis component comprises 60 credits and the course component comprises 60 credits.

It is recommended that most of the courses be taken in the first two years of doctoral studies. However, it can often be relevant to also obtain specialist knowledge at a later stage. It is important that the course components are described and explained in the individual study plan related to the doctoral student's research specialisation.

Doctoral courses that are given at other higher education institutions, national graduate schools and in international networks should be taken into account when choosing courses.

All courses must be approved by the doctoral student's principal supervisor and the programme coordinator for the doctoral programme.

## Compulsory courses

The courses aim to provide broad and in-depth theoretical subject knowledge within mathematics, micro- and macroeconomic theory, and econometrics. The majority of the compulsory courses in core economics subjects are offered through collaboration with the doctoral programme given at Stockholm University and the Stockholm School of Economics.

For a **doctoral degree** within the postgraduate subject of Economics, the following course components are compulsory, and must comprise a total of at least 60 credits:

**1. Mathematics, 15 credits.** The courses are normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Mathematics I (5 credits, <https://pcw.hhs.se/course/phd514>), Mathematics II (5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/mathematics-ii-autumn-2018->

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1.392636), Mathematics III (5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/mathematics-iii-autumn-2018-1.392637>).

**2. Microeconomics, 15 credits.** The courses are normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Microeconomics I (7.5 credits, <https://pcw.hhs.se/course/phd501>), Microeconomics II (7.5 credits, <https://pcw.hhs.se/course/phd502>).

As an alternative to Microeconomics I, the students can choose the course 1F5314 Microeconomic Theory (7.5 credits) given at KTH.

**3. Econometrics, 15 credits.** The courses are normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Econometrics I (7.5 credits (<https://www.ne.su.se/english/education/2.3646/2018-2019/econometrics-i-spring-2019-1.402232>)), Econometrics II (7.5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/econometrics-ii-spring-2019-1.408598>).

As an alternative to Econometrics I, the students can choose the course ME3543 Econometrics (7.5 credits) given at KTH.

**4. Macroeconomics, 15 credits.** The courses are normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Macroeconomics I (7.5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/macro-economics-i-spring-2019-1.406163>), Macroeconomics II (7.5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/macro-economics-ii-spring-2019-1.408599>).

Doctoral courses with corresponding content and quality which are given at other higher education institutions, national graduate schools and in international networks should also be taken into account when choosing courses.

All courses must be approved by the doctoral student's principal supervisor and the programme coordinator for the doctoral programme.

For a **licentiate degree** within the postgraduate subject of Economics, the following course components are compulsory, and must comprise a total of at least 35 credits:

**1. Mathematics, 5.0 credits.** The course is normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Mathematics I (5 credits, <https://pcw.hhs.se/course/phd514>).

**2. Microeconomics, 7.5 credits.** The course is normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Microeconomics I (7.5 credits, <https://pcw.hhs.se/course/phd501>).

As an alternative to Microeconomics I, the students can choose the course 1F5314 Microeconomic Theory (7.5 credits) given at KTH.

**3. Econometrics, 15 credits.** The courses are normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Econometrics I (7.5 credits (<https://www.ne.su.se/english/education/2.3646/2018-2019/econometrics-i-spring-2019-1.402232>)), Econometrics II (7.5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/econometrics-ii-spring-2019-1.408598>).

As an alternative to Econometrics I, the students can choose the course ME3543 Econometrics (7.5 credits) given at KTH.

**4. Macroeconomics, 7.5 credits.** The course is normally taught within the scope of the doctoral programme offered at Stockholm University and the Stockholm School of Economics: Macroeconomics I (7.5 credits, <https://www.ne.su.se/english/education/2.3646/2018-2019/macroeconomics-i-spring-2019-1.406163>).

Doctoral courses with corresponding content and quality which are given at other higher education institutions, national graduate schools and in international networks should also be taken into account when choosing courses.

All courses must be approved by the doctoral student's principal supervisor and the programme coordinator for the doctoral programme.

#### **Other basic courses and advanced courses.**

Other basic courses and advanced courses shall provide further specialisation within the subject and will be determined after consultation between the supervisor and the student.

Additional course components that the head of subject and student jointly consider important for the thesis work may also be included in the course part of the licentiate and doctoral degrees. This type of credit-awarding pursuit primarily involves individual literature courses. In order for such activities to be credited, an assessment should be made in advance by the principal supervisor.

### **Degree requirements**

#### **Degree of Doctor**

*A doctoral degree covers 240 credits. The thesis component shall cover at least 135 credits.*

#### **Thesis**

*Quality requirements and any other requirements for the thesis.*

The thesis work is a compulsory part of the doctoral education, which aims to develop the doctoral student's ability to make independent contributions to research and the scientific community. The thesis is written as a compilation of scientific articles where there is also a specially written summary (introductory chapter).

The doctoral thesis can be based on the licentiate thesis.

The thesis should normally be written in English or Swedish (for Swedish-language theses, special permission is required from the ITM School).

A doctoral thesis must contain new theoretical or empirical research results within the chosen subject area that the doctoral student has developed through theoretical or empirical research work. It should also include an overview of previous research within the chosen subject area and position the doctoral student's contribution in relation to previous research. The doctoral thesis shall be of such quality that it is deemed to correspond to at least four articles published in internationally recognised, peer-reviewed scientific journals.

A compilation dissertation, in addition to a summarising introductory chapter normally in the order of 10-30 pages, must include at least four publishable scientific articles (the international standard in the field). The doctoral student shall be the sole author of at least one article.

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### Courses

A doctoral degree within the subject requires 105 credits from courses.

### **Licentiate degree**

*A licentiate degree shall cover at least 120 credits. The thesis component shall cover at least 60 credits.*

### Thesis

*Quality requirements and any other requirements for the thesis.*

A thesis for a licentiate degree must contain an application of existing scientific knowledge within a new area that the student has developed through theoretical or empirical research work. It should also include an overview of previous research within the chosen subject area and position the doctoral student's contribution in relation to previous research.

The licentiate thesis shall be of such quality that it is deemed to correspond to at least two articles published in internationally recognised, peer-reviewed scientific journals.

After approval by the principal supervisor, the thesis is presented at a public seminar.

### Courses

A licentiate degree within the subject requires 60 credits from courses.



Appendix

Objectives based on the Higher Education Ordinance, Annex 2 Qualifications Ordinance, including KTH objectives,

with concretisation for the subject and information about the programme structure to support the doctoral student in attaining the objectives.

**Degree of Doctor**

<p><b>Objectives based on the Higher Education Ordinance, Annex 2 – Qualifications Ordinance</b></p> <p><i>For a doctoral degree, the doctoral student shall</i></p>	<p><b>Concretisation and adaptation of the objectives for the third-cycle subject</b></p>	<p><b>Programme elements intended to promote goal attainment</b></p>
<p><i>demonstrate substantial knowledge in, and systematic understanding of, the research domain, as well as advanced and current specialised knowledge in a specific part of the research domain</i></p>	<p>demonstrate substantial knowledge in, and systematic understanding of, the research domain, as well as advanced and current specialised knowledge in a specific part of the research domain</p>	<p>Participation in compulsory and optional courses as well as independent, supervised research. Participation in seminars and workshops within the doctoral subject also contributes to the goal attainment.</p>
<p><i>demonstrate familiarity with the scientific method in general and the methods employed in the specific research domain in particular</i></p>	<p>demonstrate familiarity with the scientific method in general and with empirical economics research methodology in particular</p>	<p>Participation in compulsory and optional courses as well as independent, supervised research. Participation in seminars and workshops within the doctoral subject also contributes to the goal attainment.</p>
<p><i>demonstrate skills in scientific analysis and synthesis, as well as the ability to independently review and assess new and complex concepts, problems and situations</i></p>	<p>demonstrate skills in scientific analysis and synthesis, as well as the ability to independently review and assess new and complex concepts, problems and situations</p>	<p>The goal is achieved primarily through thesis work and publication of independent research work in international, peer-reviewed journals, but also through compulsory and optional courses.</p>
<p><i>demonstrate the ability to critically, independently, creatively and with scientific precision identify and formulate issues, as well as plan and through adequate methods conduct research and other qualified tasks within given timeframes, as well as reviewing and</i></p>	<p>demonstrate the ability to critically, independently, creatively and with scientific precision identify and formulate issues, as well as plan and through adequate methods conduct research and other qualified tasks within given timeframes, as well as reviewing and evaluating work of said nature</p>	<p>The goal is achieved primarily through thesis work and publication of independent research work in international, peer-reviewed journals, but also through active participation in the department's seminar activities and at international conferences as well as compulsory and optional</p>

<p><b>Objectives based on the Higher Education Ordinance, Annex 2 – Qualifications Ordinance</b></p> <p><i>For a doctoral degree, the doctoral student shall</i></p>	<p><b>Concretisation and adaptation of the objectives for the third-cycle subject</b></p>	<p><b>Programme elements intended to promote goal attainment</b></p>
<p><i>evaluating work of said nature</i></p>		<p>courses within research methodology.</p>
<p><i>demonstrate the ability to make significant contributions to the development of knowledge through their thesis</i></p>	<p>demonstrate the ability to make significant contributions to the development of knowledge through their thesis</p>	<p>A passing grade following a public defence of the thesis.</p>
<p><i>demonstrate the ability to with authority present and discuss □ research and research results both in writing and verbally in dialogue with the national and international scientific community and society in general</i></p>	<p>demonstrate the ability to with authority present and discuss □ research and research results both in writing and verbally in dialogue with the national and international scientific community and society in general</p>	<p>Mandatory successive seminar treatment of the thesis work and participation in international conferences.</p>
<p><i>demonstrate the ability to identify the needs for additional knowledge</i></p>	<p>demonstrate the ability to identify the needs for additional knowledge</p>	<p>Thesis work and optional subject courses.</p>
<p><i>demonstrate the capacity to contribute to societal development □ and support others in their learning, both in research and education, as well as other professional contexts</i></p>	<p>demonstrate the capacity to contribute to societal development □ and support others in their learning, both in research and education, as well as other professional contexts</p>	<p>Examined within the framework of the thesis work and the department’s seminar activities. In some cases, also through optional courses in teaching and learning in higher education, and/or by transferring knowledge to stakeholders within, for example, authorities and companies and writing popular science articles in relevant national and international journals.</p>
<p><i>demonstrate intellectual independence and scientific integrity, as well as the ability to perform ethical research</i></p>	<p>demonstrate intellectual independence and scientific integrity, as well as the ability to perform ethical research</p>	<p>The ability to perform ethical research assessments is trained in the supervised thesis work. Intellectual</p>

<p><b>Objectives based on the Higher Education Ordinance, Annex 2 – Qualifications Ordinance</b></p> <p><i>For a doctoral degree, the doctoral student shall</i></p>	<p><b>Concretisation and adaptation of the objectives for the third-cycle subject</b></p>	<p><b>Programme elements intended to promote goal attainment</b></p>
<p><i>assessments</i></p>	<p>assessments</p>	<p>independence is trained and tested in connection with article publishing and during the thesis work in general. Optional courses also contribute to goal attainment.</p>
<p><i>demonstrate in-depth insight regarding the possibilities and limitations of science and our responsibility in its application</i></p>	<p>demonstrate in-depth insight regarding the possibilities and limitations of social science and the role of social science and the doctoral student in society</p>	<p>Achieved through thesis work and participation in the department’s seminar activities. In most cases, also by taking an optional course in the philosophy of science.</p>
<p><i>(KTH’s goal for environmental and sustainable development) demonstrate knowledge about and the ability to make environmental and ethical assessments in order to contribute to a sustainable societal development.</i></p>	<p>demonstrate knowledge about and the ability to make environmental and ethical assessments in order to contribute to a sustainable societal development.</p>	<p>Examined in the supervised work through participation in the department’s seminar activities and usually through optional doctoral courses with a focus on sustainable development.</p>

**Licentiate degree**

<p><b>Objectives based on the Higher Education Ordinance, Annex 2 – Qualifications Ordinance</b></p> <p><i>For a licentiate degree, the doctoral student shall</i></p>	<p><b>Concretisation and adaptation of the objectives for the third-cycle subject</b></p>	<p><b>Programme elements intended to promote goal attainment</b></p>
<p><i>demonstrate knowledge and understanding in the research domain, including current specialist knowledge in scientific methodology in general and in the specific research domain in □ particular</i></p>	<p>demonstrate knowledge and understanding in the research domain, including current specialist knowledge in scientific methodology in general and in the specific research domain in □ particular</p>	<p>Participation in compulsory and optional courses as well as independent, supervised research. Participation in seminars and workshops within the doctoral subject also contributes to the goal attainment.</p>
<p><i>demonstrate the ability to critically, independently, creatively and with scientific precision identify and formulate problems, to plan and use adequate methods to conduct specified research and other qualified tasks within given timeframes in order to help contribute to the development of knowledge, as well as reviewing and evaluating work of said nature.</i></p>	<p>demonstrate the ability to critically, independently, creatively and with scientific precision identify and formulate problems, to plan and use adequate methods to conduct specified research and other qualified tasks within given timeframes in order to help contribute to the development of knowledge, as well as reviewing and evaluating work of said nature.</p>	<p>The goal is achieved primarily through thesis work and publication of independent research work in international, peer-reviewed journals, but also through active participation in the department’s seminar activities and at international conferences as well as compulsory and optional courses within research methodology.</p>
<p><i>demonstrate the ability to clearly present and discuss research and research results both in speech and in writing in dialogue with the national and international scientific community and society in general</i></p>	<p>demonstrate the ability to clearly present and discuss research and research results both in speech and in writing in dialogue with the national and international scientific community and society in general</p>	<p>Mandatory successive seminar treatment of the thesis work and participation in international conferences.</p>
<p><i>demonstrate the skills necessary for independent participation in research and development efforts and to work independently in other qualified operations</i></p>	<p>demonstrate the skills necessary for independent participation in research and development efforts and to work independently in other qualified operations</p>	<p>The goal is achieved primarily through thesis work and publication of independent research work in international, peer-reviewed journals, but also through compulsory and optional courses.</p>
<p><i>demonstrate the ability to perform ethical research</i></p>	<p>demonstrate the ability to perform ethical research</p>	<p>The ability to perform ethical research assessments is trained</p>

<p><b>Objectives based on the Higher Education Ordinance, Annex 2 – Qualifications Ordinance</b></p> <p><i>For a licentiate degree, the doctoral student shall</i></p>	<p><b>Concretisation and adaptation of the objectives for the third-cycle subject</b></p>	<p><b>Programme elements intended to promote goal attainment</b></p>
<p><i>assessments and applying these to one’s own research</i></p>	<p>assessments and applying these to one’s own research</p>	<p>in the supervised thesis work. Intellectual independence is trained and tested in connection with article publishing and during the thesis work in general. Optional courses also contribute to goal attainment.</p>
<p><i>demonstrate insight regarding the possibilities and limitations of science and our responsibility in its application</i></p>	<p>demonstrate insight regarding the possibilities and limitations of science and our responsibility in its application</p>	<p>Achieved through thesis work and participation in the department’s seminar activities. In most cases, also by taking an optional course in the philosophy of science.</p>
<p><i>demonstrate the ability to identify their need for additional knowledge and take responsibility for the development of their own knowledge</i></p>	<p>demonstrate the ability to identify their need for additional knowledge and take responsibility for the development of their own knowledge</p>	<p>Thesis work and optional subject courses.</p>
<p><i>(KTH’s goal for environmental and sustainable development) demonstrate knowledge about and the ability to make environmental and ethical assessments in order to contribute to a sustainable societal development</i></p>	<p>demonstrate knowledge about and the ability to make environmental and ethical assessments in order to contribute to a sustainable societal development</p>	<p>Examined in the supervised work through participation in the department’s seminar activities and usually through optional doctoral courses with a focus on sustainable development.</p>