

**REGULATION****Decision-maker**
President**Valid from**
2024-01-30**Revised as of**
[Click or tap here to enter the date.](#)**Reference number**
V2023-0910 3.2.3**Entity responsible for supervision and questions**
School of Architecture and the Built Environment

General syllabus for education at third-cycle level in the subject Urban and Regional Planning

This regulatory document has been decided by the President (V2023-0910) pursuant to chapter 6 sections 26-27 of the Higher Education Ordinance. The regulatory document is valid with effect from 30-01-2024. The regulatory document regulates the main content of the education, requirements for special qualifications and the other regulations that are needed. The School of Architecture and the Built Environment is responsible for review and questions about the governing document.

1 Content of the education

1.1 The name of the subject in Swedish and in English translation

Urban and Regional Planning

1.2 Subject description

The subject of Urban and Regional Planning consists of analyses of phenomena and processes that can be affected by comprehensive planning. It focuses on the sustainable development, planning, management and use of society's resources, including land, the built environment and infrastructure. One overall focus of the subject is on spatial planning that contributes to democracy and the sustainable transition of society, covering social, economic and ecological factors. This includes various spatial and policy levels, the roles of actors and the behaviour and circumstances of individuals. The subject embraces a view of urban and regional planning as a process that changes over time, in which actors with different resources, knowledge and motivations interact. Furthermore, urban and regional planning is considered a highly complex pursuit, with inherent conflicts among different societal objectives and geographical levels as well as the knowledge, interests and claims of various groups. One important perspective of all research in the subject is to consider societal development as an expression of various social, cultural, economic, technological and ecological driving forces, where changes in one part often have consequences for the other parts and for the whole. The focus can be on one or more subject areas of relevance to community planning. Studies can be conducted at the local, regional, national and international levels, as well as their interaction, often with some form of spatial perspective. Studies are often carried out in collaboration or regular exchange with non-academic actors or groups, including in formulation of research questions, implementation and feedback of results. This also means that research makes an important contribution by strengthening and improving practices, such as methodologies, approaches and policies. The subject is interdisciplinary and its tools are drawn from social sciences as well as from engineering, natural sciences and humanities.

1.3 Specialisations

The subject has no specialisations.

1.4 Organisation of the education

Third-cycle education consists of a course component and an academic paper/thesis component. Courses may, for example, consist of lectures, literature studies and problem-solving, as well as active participation in seminars. Courses can be attended at KTH or in collaboration with other Swedish or foreign research institutions.

Doctoral students must have at least two supervisors, one of which is the principal supervisor. Courses and study programmes must be in line with the general syllabus, and are planned and monitored using the individual study plan. The student's individual study plan must be adapted to the student's prior knowledge as well as to the focus of the licentiate/doctoral thesis.

The Degree of Licentiate may be taken as part of the Degree of Doctor, if the doctoral student wishes. Courses and thesis work included in the Degree of Licentiate may also be credited towards a Degree of Doctor. The Degree of Licentiate consists of a course component comprising 30 credits, of which 18 credits are compulsory, and a thesis component comprising 90 credits, amounting to 120 credits in total. The Degree of Doctor consists of a course component comprising 60 credits, of which 18 credits are compulsory, and a thesis component comprising 180 credits, corresponding to 240 credits in total.

1.4.1 Activities for fulfilment of outcomes for the education according to the Higher Education Ordinance (HF)

Below are described activities for the doctoral student's fulfilment of the learning outcomes for third-cycle education according to the Higher Education Ordinance (HF) and KTH's goals. The individual study plan specifies the activities for each individual doctoral student.

Learning outcomes: Knowledge and understanding

For the Degree of Doctor the doctoral student shall:

- Demonstrate broad knowledge and a systematic understanding of the research field as well as advanced and up-to-date specialist knowledge in a limited area of this field.

A broad understanding of the research area and in-depth specialised knowledge must both be demonstrated in the thesis. The in-depth knowledge is demonstrated through original scientific work, usually in the form of peer-reviewed articles. In the case of co-authored works, the student's contribution must be clearly indicated. A literature review of relevant research must be included in the thesis (introductory chapter, or equivalent) to demonstrate an understanding of both the broader and the more specialised research area, and the student's own contribution to the field must be made clear.

The compulsory courses aim to provide a general understanding and overview of the research field and its development. This is also provided by seminars in the research environment, with active participation in which work by the student and others is presented and discussed. In order to create specialised and relevant knowledge in the field of the thesis, the elective courses must support this. In addition to the student's own theoretical and empirical studies, their

choice of conferences for the presentation of interim results can contribute to both broad and specialised knowledge.

- Demonstrate familiarity with research methodology in general and the methods of the specific field of research in particular.

Familiarity with methods must be demonstrated in the doctoral thesis by including a comprehensive methods section in the introductory chapter or equivalent, as well as in the implementation of the study. This means that the student has developed the ability to independently carry out, interpret and critically review results with the aim of clarifying whether the method and its execution were appropriate for obtaining credible results to answer the scientific question; justified their choice of method and execution in relation to the research question and to alternative methods; and accounted for the advantages and disadvantages of different scientific methods used in their own research area.

The ability to reflect, both orally and in writing, on the choice of method and its strengths or weaknesses shall be addressed in particular in the compulsory seminars of the programme (one-year seminar, half-time seminar and final review).

A compulsory course in philosophy of science and research methodology is included. The student is also recommended to participate in one or more courses dealing with methods relevant to their own studies.

For a 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 in particular.

Specialised knowledge in a subfield is demonstrated through original scientific work, usually in the form of peer-reviewed articles. In the case of co-authored works, the student's contribution must be clearly indicated. A literature review of relevant research must be included in the academic paper (introductory chapter or equivalent) to demonstrate knowledge and understanding of the research domain. The student's contribution to the field must be made clear.

The compulsory planning theory course must be included in the Degree of Licentiate in order to obtain a general overview of the field, and in-depth specialised knowledge is obtained through a combination of elective courses and active participation in seminars within the environment where the results of the student and others are presented and discussed.

Knowledge of methods is obtained through the compulsory philosophy of science and methods course, and a methods course for application within the student's own study can be taken for elective course credits. Methods must be well described in the introductory chapter or equivalent, and methodological issues must be addressed in particular in the compulsory seminars of the programme.

Learning outcome: 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.

The thesis demonstrates the ability to independently formulate and critically analyse existing as well as new complex phenomena, presents concrete examples of scientific questions and problems of a complex nature from the student's research, and describes how these have been tested and the results analysed. In addition, the doctoral student must be able to describe the interpretation of the results and how these have been combined with existing knowledge to bring about new explanatory models or a deeper understanding of the phenomenon being studied.

Seminar participation, as well as commenting on and discussing the work-in-progress being presented, both in writing and orally, will support the achievement of the outcomes. This is also done through ongoing dialogue with supervisors regarding the development and implementation of the student's research work.

- 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.

Planning and carrying out the student's own research work within given timeframes. Planning takes place in the individual study plan and through regular monitoring, with supervision of the development of the work and decisions on method, theory and knowledge needs. This is also developed through the compulsory seminars. The choices and considerations that have been made are described in the thesis.

The work of others is reviewed and commented on in seminars and courses.

- Demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research.

Development of a research overview as a basis for considering current knowledge gaps and research needs, as well as discussion of the student's contributions. This is supported by compulsory seminars on the development of the thesis (one-year seminar, half-time seminar and final review) with an external reviewer in the field, as well as by the ongoing supervision.

Writing original scientific work where the student's contributions are significant and identifiable. The work is of sufficient quality that it has or will be published in peer-reviewed international scientific journals or conferences.

Publication of a thesis, based on the scientific work, of good scientific and linguistic quality,

defended and discussed authoritatively at a public defence of doctoral thesis, and awarded a passing grade by an independent grading committee.

- 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.

Participation in presentations at national and international conferences and research seminars, including participation in research discussions with researchers outside the student's own environment. Participation in meetings and seminars aimed at the general public and participation in popular-science writing related to research results.

Have the ability to choose presentation formats and design presentation materials adapted to the target group and purpose, academic or popular science.

This includes active participation in seminars and other research activities in the student's research environment.

- Demonstrate the ability to identify the need for further knowledge.

In the research process, discuss what knowledge is required to carry out the work, and demonstrate in the thesis the delimitations and choices made in the process which indicated the need for further knowledge.

In tutorials and seminars, reflect on and develop proposals regarding what knowledge is needed and why.

Demonstrate the ability to determine whether a piece of knowledge already exists, as well as the ability to question, evaluate and adapt one's perception of one's own knowledge and ability in relation to the current knowledge frontier.

- 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.

Explain in the thesis how the research contributes to the development of society.

If possible, participate in teaching, e.g., through supervision at first- and second-cycle level, leading seminars and tutorials.

Doctoral students are recommended to take a course in higher education pedagogy as part of the programme. The course in higher education pedagogy is compulsory for those involved in teaching at first- and second-cycle level.

Generally contribute to learning through active participation in seminars, for both academic and non-academic target groups, e.g., government, businesses and professionals, or through school

visits and media participation. In doing so, demonstrate and develop the ability to use appropriate ways of communicating knowledge in a pedagogical fashion, adapted to the target group and context.

Demonstrate the ability to co-operate and communicate in writing and orally, to undertake tasks and assignments that are planned and completed on time, and to follow applicable rules and directives, thereby acquiring the general knowledge and skills required in various functions of society.

For a 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.

Planning and carrying out the student's own research work within given timeframes. Account for choices made and delimitations in the licentiate thesis, and, using the research overview, show knowledge gaps, research needs and one's own contribution. Plan using the individual study plan, and ongoing monitoring through supervision of the development of the work and decisions on methods, theory and knowledge needs.

In the thesis, one's own problem and questions for research project are presented, and the choice of methods and the outcome of the study are described. If the outcome was not as expected, possible causes and measures to move forward are reported. This includes justifying and explaining the choice of methods.

- Demonstrate ability in both national and international contexts to present, discuss research, and research findings in speech and writing and in dialogue with the academic community and society in general.

Participation in presentations at national and international research seminars/conferences, as well as participation in scientific discussions with researchers in the research domain. Participate in meetings and seminars aimed at the public and participate in popular-science writing related to research results. In doing so, demonstrate and develop the ability to use appropriate ways of communicating knowledge in a pedagogical fashion, adapted to the target group and context.

- Demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.

Authored original scientific works where one's own contributions are significant and identifiable. The works are of such quality that they have been published, or are expected to be published, in international scientific journals or conferences that apply peer review.

Authored a thesis, based on the scientific work, of good scientific and linguistic quality that was

authoritatively defended and discussed in a public defence of the doctoral thesis and been examined with a pass grade by an independent examining committee.

In seminars and examinations, demonstrated independence in planning and carrying out the studies and in written and oral presentation of the study's organisation, implementation and results.

Learning outcomes: 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.

Compulsory course in research ethics contributes to basic knowledge of ethical aspects. Issues of ethics and the role of the researcher must be discussed continuously in supervision and in connection with seminars. The thesis must include a clear account of the student's contribution to joint publications and studies, as well as an account of research ethics considerations.

The doctoral student must demonstrate the ability to discuss both their own and others' research as well as research results from an ethical perspective.

- 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.

In the thesis and at seminars, the doctoral student must discuss how their own research results contribute knowledge to the research domain and their social relevance. The thesis must include critical consideration of the limitations of the results in solving socially relevant problems, as well as their potential negative and positive consequences.

For a Degree of Licentiate, the doctoral student shall:

- Demonstrate the ability to make assessments of ethical aspects of his or her own research.

Compulsory course in research ethics supporting goal fulfilment is included in the syllabus. Issues of ethics and the role of the researcher must be discussed continuously in supervision and in connection with seminars. The thesis must include an account of the student's contribution to co-authored publications and studies as well as of research ethics aspects.

- Demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

To show, in the thesis, how one's own research results contribute knowledge to the research domain and their social relevance.

In the thesis and seminars, demonstrate the ability to critically consider the limitations of one's own research results, and the research field in general, in order to contribute to solving socially

relevant problems, and identify possible situations where one's own research results can be used in both positive and negative ways.

- Demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

In tutorials and seminars, reflect on and develop proposals regarding what knowledge is needed and why.

In the thesis, describe the choices and considerations made based on the practical and theoretical knowledge needs that have been identified.

Demonstrate the ability to question, evaluate and adapt one's perception of one's own knowledge and ability in relation to the current knowledge frontier.

KTH's outcome in sustainable development

For both the Degree of Licentiate and the Degree of Doctor, the doctoral student shall:

- Demonstrate with knowledge and skills the ability to be able to contribute to sustainable societal development towards an equal, inclusive and climate-neutral society.

Sustainable development and societal transition are central to this research domain. Issues related to the social, economic and ecological aspects of societal transition are addressed in the licentiate/doctoral thesis, in courses and seminars, and in supervision.

Gender equality, diversity and equal conditions are addressed in supervision, seminars and third-cycle courses, as well as being part of ongoing discussions in the research environment, both as related to the work environment and to research.

For both the Degree of Licentiate and the Degree of Doctor, the doctoral student shall:

In the licentiate/doctoral thesis, show how one's own research can contribute to sustainable social development and transition, generally or in a specific area, and relate the results to the existing research frontier in the research specialisation vis-a-vis sustainable development, as well as how the results can be used in society.

Furthermore, during the programme, the doctoral student must demonstrate, orally and/or in writing, a critically reflective approach and judgement, with a focus on norms, values and one's own role; demonstrate the ability to analyse and describe complex relationships; demonstrate a strategic ability and understanding of the need for a systemic and time-oriented perspective on societal change; and demonstrate the ability to identify the need for collaboration to meet societal challenges.

Demonstrate knowledge of the importance of gender equality, diversity and equal conditions for sustainable societal development, the need for transition and change, and the ability to analyse and discuss these issues in relation to one's own thesis work and research role. These issues must also be linked to research ethics.

Gender, diversity and equal conditions are included as a module in the compulsory course in planning theory

1.4.2 Compulsory courses

For the licentiate and doctoral degrees, the following compulsory third-cycle courses are included:

- Introduction to Graduate Studies and Sustainable Development (1.5 credits)
- Planning Theory (7.5 credits)
- Scientific Theory and Research Methodology (7.5 credits) Can be achieved by the following (or equivalent): Self-reflexive Methodology for the Scientific Study of Complex Social Phenomena (3.0 credits) supplemented with 4.5 theory-of-knowledge credits, e.g., Introduction to the Philosophy of Science and Research Methodology, Social Sciences (4.5 credits).
As an alternative to these, students can take Introduction to the Philosophy of Science and Research Methodology (7.5 credits) or Introduction to Theory of Science and Research Methodology, for Graduate Students in Technology and Natural Sciences (7.5 credits). (7.5 credits)
- Introduction to research law and ethics: either through a course in Research Law and Ethics with a specialisation in urban and regional planning, or Introduction to Research Ethics for Doctoral students (1.5 credits).

1.4.3 Recommended courses

The following courses are recommended, and can be chosen according to the needs of the thesis work: Courses are normally offered when there is sufficient demand, except for reading and seminar courses, which are offered on a regular basis.

Seminars in Urban and Regional Planning (4.5 credits)

Advanced Transport Policy and Sustainable Mobility (7.5 credits)

Theory and Analysis of Decision-making (7.5 credits)

Individual Literature Course in Urban and Regional Studies (7.5 and 15 credits respectively)

Spatial Data Analysis in Practice (7.5 credits)

Communicating Planning Research to Academic Audiences (7.5 credits)

Essay in Self-reflexive Methodology (4.5 credits)

Higher Seminars in Urban Design and Planning (7.5 credits)

Essay in Popular Science (3.0 credits)

Introduction to Gender Equality, Diversity and Equal Opportunities (JML) for PhD Students (0.5 credits)

Writing Scientific Articles (5.0 credits)

Basic Communication and Teaching (3.0 credits) or other course in higher education pedagogy

Leadership and Power in Industrial Organisations: Perspectives of Gender and Diversity (6.0 credits), advanced course

In addition to these, courses can be taken, at KTH or another university, that support one's own research work, methodologically, theoretically and/or in terms of application.

1.4.4 Conditional elective courses

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1.4.5 Requirements for the degree

Degree of Doctor

A Degree of Doctor comprises 240 credits. At least 120 credits must consist of the doctoral thesis

Thesis

Quality requirements and possible other requirements for the thesis.

A thesis for the Degree of Doctor must include new theoretical or empirical research results in the subject area which the student has developed through theoretical or empirical research. It must also include a review describing previous research in the chosen subject area. The thesis must be of such quality and scope that it can normally form the basis for four research articles that can be published in internationally recognised peer-reviewed journals. If the doctoral student has co-authored articles, their own contributions must be made clear.

The doctoral thesis should normally be written as a compilation of scientific articles/manuscripts, but can also be written as a monograph thesis. A compilation must include a specially written introduction and summary of the work included (the 'introductory chapter').

The doctoral thesis is normally written in English. The director of third-cycle education may grant exceptions. The summary must be written in English and Swedish.

Prior to the application for the defence of the doctoral thesis, an internal quality audit shall be carried out, normally commencing with the participation of the quality reviewer in the final review, in order to then review the final manuscript.

Courses

The doctoral student shall have completed courses of at least 60 credits, of which 45 credits must be at third-cycle level and no more than 10 credits can be at first-cycle level.

The qualification requirements include 18 credits of compulsory courses (see above, 1.4.2).

Degree of Licentiate

A Degree of Licentiate comprises at least 120 credits. At least 60 credits must consist of the academic thesis.

Thesis

Quality requirements and possible other requirements for the licentiate thesis.

A licentiate thesis must contain new theoretical or empirical research results in the chosen subject area, or an application of existing scientific knowledge in a new area that the student has developed through theoretical or empirical research work. It must also include a review describing previous research in the chosen subject area. The thesis must be of such quality and scope that it can normally form the basis for two research articles that can be published in internationally recognised peer-reviewed journals. If the doctoral student has co-authored articles, their own contributions must be made clear.

The licentiate thesis should normally be written as a compilation of scientific articles/manuscripts, but can also be written as a monograph thesis. A compilation must include a specially written introduction and summary of the work included (the ‘introductory chapter’).

The licentiate thesis is normally written in English. The director of third-cycle education may grant exceptions. The summary must be written in English and Swedish.

Before applying for a licentiate seminar, an internal quality audit of the final manuscript must be carried out. If a final seminar is held, it is normally attended by the designated quality reviewer, who will then be the first stage of the review.

Courses

The doctoral student shall have completed courses of at least 30 credits, of which 15 credits must be at third-cycle level and no more than 10 credits can be at first-cycle level

The qualification requirements include 18 credits of compulsory courses (see above, 1.4.2).

1.4.6 Other elements in the education to promote and ensure goal attainment

During the programme, doctoral students are expected to participate in national and international conferences in the field of knowledge. Doctoral students are encouraged to present their results annually at an international scientific conference or in another external context.

During their studies, doctoral students receive comments from external reviewers outside the supervisory group, and from other environments, through presentation at compulsory seminars:

For the Degree of Doctor, three compulsory seminars are included: one-year seminar, half-time seminar and final review. The final review must be held when the equivalent of 80 per cent of the thesis component is deemed complete. These seminars will address issues that support goal attainment, with a particular focus on methods, contribution to the development of knowledge in the research field, societal relevance of results, autonomy, ethics and the role of the researcher.

The Degree of Licentiate includes a compulsory half-time seminar, after about one year of study. A final review can also be held in connection with internal review prior to the licentiate seminar.

This will address issues that support goal attainment, with a particular focus on methods, relevance of results, autonomy, ethics and the role of the researcher.

2 Admission to education at third-cycle level (qualification etc.)

Admission to education at third-cycle level is regulated in Chapter 7, Section 40 of the Higher Education Ordinance and in the admission regulations at KTH. KTH's regulations on specific prerequisites and such abilities in other respects as are needed to assimilate the education in the relevant subject at the doctoral level are set out below.

2.1 Specific prerequisites

To be admitted to the third-cycle education in **Urban and Regional Planning** the applicant must have passed courses resulting in at least 60 credits at minimum second-cycle level in **technology, natural sciences, Urban and Regional Planning, or areas of expertise which are addressed in the field of planning** or other subjects deemed directly relevant to the chosen specialisation. These entry requirements can also be considered fulfilled by an applicant who has acquired essentially equivalent knowledge in arrangement

In order to be admitted to third-cycle education in **Urban and Regional Planning**, the applicant must have knowledge of English equivalent to English 6.

2.2 Assessment criteria for testing the ability to assimilate the education

The following assessment criteria apply for testing the ability to assimilate the education:

Selection for third-cycle education is based on assessed ability to assimilate such education. The ability assessment is primarily based on having passed courses and programmes that satisfy the entry requirements. Particular consideration is given to the following:

1. Knowledge and skills relevant for thesis work and the subject.
These can be shown through attached documents and a possible interview
2. Assessed ability to work independently
 - a. ability to formulate and tackle scientific problems
 - b. ability to communicate well in speech and writing
 - c. maturity, judgement and ability to analyse critically and independently

The assessment may be based, for example, on degree projects and discussion of these at a possible interview.

3. Other experience relevant for third-cycle education, e.g. professional experience.
These can be demonstrated through attached documents and, potentially, an

interview.

3 The other regulations needed

3.1 Transitional regulations

Doctoral students admitted under a previous syllabus either follow the syllabus to which they were admitted or, on request, adopt the new syllabus. Requests to adopt a new syllabus are made to the director of third-cycle education at the school.

When changing the general syllabus from the one issued on 5 April 2017 to the current general syllabus, the following courses from the older subject syllabus may be transferred to this subject syllabus:

- The course Seminars in Planning and Decision Analysis corresponds to the new course Seminars in Urban and Regional Planning (4.5 credits)

Other courses included in both the previous and this study plan can be transferred, as well as other, optional courses.

However, one precondition for changing syllabi is that the new syllabus can be achieved in time.

KTH Appendix: Goals for qualification and assessment criteria

Goals according to Appendix 2 of the Degree Ordinance to the Higher Education Ordinance, including requirements specified by KTH with examples of assessment criteria that can determine whether the doctoral student has achieved the goals. *The assessment criteria in the table are examples and developed as a support and inspiration for activity descriptions in part 1.4.*

Degree of Doctor

Knowledge and understanding	
Intended learning outcomes	Assessment criteria with reference to numbering in eISP
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.	<p>The outcome has been achieved through the doctoral student having</p> <p>A1.1: authored original scientific works where their own contributions are significant and identifiable. The works are of such quality that they have been published, or are expected to be published, in international scientific journals or conferences that apply peer review.</p> <p>A1.2: demonstrated both broad and specialised knowledge in the research area by writing a thesis in which the research results were placed and discussed in a broader perspective, and presented a reference list of others' research results that spans the relevant breadth of the research area.</p> <p>A1.3: demonstrated, at a seminar, a course or in the thesis or its public defence, a good ability to account for how their own research results relate to the research front within the research area, and justify how their own results advance this.</p> <p>A1.4: actively participated in seminar activities where their own results were presented and discussed, as well as asked questions and provided feedback on other students' and researchers' presentations.</p>
Demonstrate familiarity with research methodology in general and the methods of the specific field of research in particular.	<p>The outcome has been achieved through the doctoral student having</p> <p>A2.1: been examined with an approved result regarding intended learning outcomes in scientific methodology, which may be a course or equivalent learning element at third-cycle level.</p> <p>A2.2: described basic theories in scientific theory and correctly applied one or more of these in their own research.</p> <p>A2.3: practically applied to the research area appropriate methods and developed the ability to independently perform, interpret and critically examine the results in order to clarify whether the method and its execution were appropriate to obtain credible results that answer the scientific question.</p> <p>A2.4: justified their choice of method and execution in relation to the issue and to alternative methods.</p> <p>A2.5: described the advantages and disadvantages of different scientific methods used in their own research area, as well as the methods used in the broader definition of the research area</p>

Competence and skills	
Intended learning outcomes	Assessment criteria with reference to numbering in eISP
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.	<p>The outcome has been achieved through the doctoral student having</p> <p>B1.1: demonstrated the ability to independently formulate and critically analyse both existing and new complex phenomena.</p> <p>B1.2: presented concrete examples of scientific questions and problems of a complex nature from their own research and described how these were tested and how the results were analysed.</p> <p>B1.3: described the interpretation of the results and how these were combined with existing knowledge to give rise to a new explanatory model.</p> <p>B1.4: in cases where it is applicable, presented concrete examples of results that have given rise to falsification of a hypothesis and revision of the hypothesis.</p>
Demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work.	<p>The goal has been achieved through the doctoral student having</p> <p>B2.1: presented examples of independently performed experiments / simulations / tasks that were preceded by detailed time planning.</p> <p>B2.2: in cases where it is applicable, presented examples of their own hypotheses that have been tested within the framework of their own research project and described the choice of method and outcome. In cases where the result did not turn out as expected, the research student shall have reported on possible sources of error and what measures were taken to move forward in the project.</p> <p>B2.3: presented examples of and described and argued for the choice of methods for individual research tasks.</p> <p>B2.4: described how it was ensured that the education could be completed on time and whether there were obstacles to staying within the time frame, as well as what measures were taken and their outcome.</p>
Demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research.	<p>The goal has been achieved through the doctoral student having</p> <p>B3.1: authored original scientific works where their own contributions are significant and identifiable. The works are of such quality that they have been published, or are expected to be published, in international scientific journals or conferences that apply peer review.</p> <p>B3.2: authored a thesis, based on the scientific work, of good scientific and linguistic quality that was authoritatively defended and discussed in a public defence of the doctoral thesis and been examined with a pass grade by an independent examining committee.</p>
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.	<p>The goal has been achieved through the doctoral student having</p> <p>B4.1: in cases where it is applicable, participated in national and international conferences and presented their own research results in poster form or verbally, as well as participated in scientific discussions with other researchers in the research field.</p> <p>B4.2: described how experience from conference or seminar presentations contributed to developing their own ability to</p>

	<p>communicate and defend scientific results, as well as how the presentations were received by other participants and whether valuable information could be obtained that helped their own studies progress.</p> <p>B4.3: been examined with a pass grade for intended learning outcomes in communication or presentation technology in a suitable compulsory or optional course at third-cycle level.</p> <p>B4.4: described basic concepts, tools and methods in presentation or communication technology, as well as demonstrated the ability to put the knowledge into practice by formulating different types of scientific presentation material of good quality.</p> <p>B4.5: presented their research results in a pedagogical way for other students and researchers at academic seminars, for a general audience or for another category of recipients, where the formulation of presentation material and speech was based on pedagogical knowledge adapted to the audience's knowledge level and also answered questions at an adequate level for the audience.</p> <p>B4.6: participated in outreach activities related to their own research in order to contribute to the dissemination of knowledge and exchange of knowledge with relevant stakeholder groups such as other universities, companies, authorities, schools etc.</p>
<p>Demonstrate the ability to identify the need for further knowledge.</p>	<p>The outcome has been achieved through the doctoral student having</p> <p>B5.1: by means of concrete examples, described how the lack of essential knowledge needed to carry out a task was rectified and how this affected the possibility of carrying out the task. This may involve widely differing tasks and knowledge, with the proviso that the third-cycle students themselves must have realised that knowledge was lacking and handled this with measures relevant to the purpose.</p> <p>B5.2: demonstrated insight that the knowledge front in higher education and research is in constant change and development and that definitive answers cannot always be obtained, as well as the ability to determine whether certain knowledge already exists, for example by means of thorough and critical examination of existing scientific literature.</p> <p>B5.3: demonstrated the ability to question, evaluate and adapt their perception of their own level of knowledge and ability in relation to the prevailing knowledge front.</p>
<p>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.</p>	<p>The outcome has been achieved through the doctoral student having</p> <p>B6.1: presented their research results in a pedagogical way for other students and researchers at academic seminars, for a general audience or for another category of recipients, where the formulation of presentation material and speech was based on pedagogical knowledge adapted to the audience's knowledge level and also answered questions at an adequate level for the audience.</p> <p>B6.2: participated in outreach activities related to their own research in order to contribute to the dissemination of knowledge and exchange of knowledge with relevant stakeholder groups such as other universities, companies, authorities, schools etc.</p> <p>B6.3: actively supervised other students in theoretical and / or practical projects. Third-cycle students should, with examples,</p>

	<p>account for and reflect on various aspects of their own input, for example how the supervision was structured, whether pedagogical methodology was applied, how it was ensured that the person who was supervised understood the instructions etc. Third-cycle students should also reflect on different roles of teachers and students and how personal dynamics and supervision techniques can affect the outcome of learning and interaction.</p> <p>B6.4: been examined with a pass grade for intended learning outcomes in teaching and learning in higher education in a suitable compulsory or optional course at third-cycle level. The third-cycle student is thus assumed to be able to describe basic concepts, materials and methods, as well as conditions for teaching and learning in higher education, as well as to analyse, evaluate and develop teaching and learning. Third-cycle student is thus also assumed to be able to show the ability to evaluate and analyse different methods and approaches in higher education and to show the ability to take a student perspective into account.</p> <p>B6.5: demonstrated the ability to collaborate and communicate in writing and speech, undertaken tasks and assignments that were planned and completed on time and demonstrated the ability to comply with applicable rules and directives and thereby acquired general knowledge and skills required in different societal functions.</p>
Judgement and approach	
Intended learning outcomes	Assessment criteria with reference to numbering in eISP
<p>Demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics.</p>	<p>The outcome has been achieved through the doctoral student having</p> <p>C1.1: demonstrated intellectual integrity in the sense that their own choices and positions have been justified and defended on the basis of independent critical thinking in relation to proven experience and scientific basis.</p> <p>C1.2: described how they ensured that their own scientific procedure in theory and practice was carried out in an honest and ethical manner.</p> <p>C1.3: reflected on possible existing or hypothetical ethical dilemmas related to their own research area or to scientific research in general, and reported on their own ethically independent stance in the existing or hypothetical situation.</p> <p>C1.4: been examined with a pass grade for intended learning outcomes in ethics in a suitable compulsory or optional course at third-cycle level. The research student is thus assumed to be able to describe basic theories in research ethics and relate these to their own approach and research work.</p>
<p>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</p>	<p>The outcome has been achieved through the doctoral student having</p> <p>C2.1: presented concrete examples of how their own research results, and the research area in general, can contribute new knowledge to the research front in the area and justify its societal relevance.</p> <p>C2.2: critically reflected on limitations of their own research results, and the research area in general, in order to contribute to solving</p>

	<p>societally relevant problems, as well as identify possible situations where their own research results can be used in both a positive and negative way.</p> <p>C2.3: demonstrated good ability to reflect on how their own research results can contribute to sustainable societal development and can, where relevant, also link these to the prioritised global sustainable development goals.</p> <p>C2.4: described how their own actions and approach take into account the concept of sustainability.</p> <p>C2.5: been examined with a pass grade for intended learning outcomes in sustainable development in a suitable compulsory or optional course at third-cycle level. The research student is thus assumed to be able to describe basic theories in sustainability and relate these to their own approach and research work.</p>
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Degree of Licentiate

Knowledge and understanding	
Intended learning outcomes	Assessment criteria with reference to numbering in eISP
<p>Demonstrate knowledge and understanding in the field of research including current specialist knowledge in his or her artistic field as well as specialised knowledge of research methodology in general and the methods of the specific field of research in particular..</p> <p><i>Main differences in relation to the doctoral degree: For the licentiate degree, it is enough to be able to show “knowledge and understanding”, as opposed to “broad and systematic understanding”. Also, “deep up-to-date specialist knowledge” is replaced by “up-to-date specialist knowledge”.</i></p>	<p>The outcome has been achieved through the doctoral student having</p> <p>A1.1: authored original scientific works where their own contributions are significant and identifiable. The works are of such quality that they have been published, or are expected to be published, in international scientific journals or conferences that apply peer review.</p> <p>A1.2: demonstrated both broad and specialised knowledge in the research area by writing a licentiate thesis in which the research results were placed and discussed in a broader perspective, and presented a reference list of others’ research results that spans the relevant breadth of the research area.</p> <p>A1.3: demonstrated, at a seminar, a course or in the licentiate thesis and its public defence, a good ability to account for how their own research results relate to the research front within the research area, and justify how their own results advance this.</p> <p>A1.4: actively participated in seminar activities where their own results were presented and discussed, as well as asked questions and provided feedback on other students’ and researchers’ presentations.</p>
Competence and skills	
Intended learning outcomes	Assessment criteria with reference to numbering in eISP
<p>Demonstrate the ability to identify and formulate issues with scholarly precision</p>	<p>The goal has been achieved through the doctoral student having</p>

<p>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</p> <p><i>Main differences in relation to the doctoral degree: For the licentiate degree, it is emphasized that this is “limited research work” that will contribute to the development of knowledge, in contrast to the doctoral degree where one must be able to show the ability to “conduct research”.</i></p>	<p>B1.1: demonstrated the ability to independently formulate and critically analyse both existing and new complex phenomena.</p> <p>B1.2: presented examples of their own questions that were tested within the framework of their own research project, as well as described the choice of method and outcome. In cases where the result did not turn out as expected, the research student shall have reported on possible sources of error and what measures were taken to move forward in the project.</p> <p>B1.3: presented examples of independently performed experiments / simulations / tasks that were preceded by detailed time planning.</p> <p>B1.4: presented examples of and described and argued for the choice of methods for individual experiments.</p> <p>B1.5: described how it was ensured that the education could be completed on time and whether there were obstacles to staying within the time frame, as well as what measures were taken and their outcome.</p>
<p>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.</p> <p><i>Main differences in relation to the doctoral degree: The licentiate degree requires the student to communicate their research “clearly”, as opposed to communicating “with authority”.</i></p>	<p>The goal has been achieved through the doctoral student having</p> <p>B2.1: in cases where it is applicable, participated in national and international conferences and presented their own research results in poster form or verbally, as well as participated in scientific discussions with other researchers in the research field.</p> <p>B2.2: described how experience from conference or seminar presentations contributed to developing their own ability to communicate and defend scientific results, as well as how the presentations were received by other participants and whether valuable information could be obtained that helped their own studies progress.</p> <p>B2.3: been examined with a pass grade for intended learning outcomes in communication or presentation technology in a suitable compulsory or optional course at third-cycle level.</p> <p>B2.4: described basic concepts, tools and methods in presentation or communication technology, as well as demonstrated the ability to put the knowledge into practice by formulating different types of scientific presentation material of good quality.</p> <p>B2.5: presented their research results in a pedagogical way for other students and researchers at academic seminars, for a general audience or for another category of recipients, where the formulation of presentation material and speech was based on pedagogical knowledge adapted to the audience’s knowledge level and also answered questions at an adequate level for the audience.</p> <p>B2.6: participated in outreach activities related to their own research in order to contribute to the dissemination of knowledge and exchange of knowledge with relevant stakeholder groups such as other universities, companies, authorities, schools etc.</p>
<p>Demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity..</p> <p><i>Main differences in relation to the doctoral degree: The doctoral student's future contribution to society through research and</i></p>	<p>The goal has been achieved through the doctoral student having</p> <p>B3.1: authored original scientific works where their own contributions are significant and identifiable. The works are of such quality that they have been published, or are expected to be published, in international scientific journals or conferences that apply peer review.</p> <p>B3.2: authored a licentiate thesis based on their own studies of good</p>

<p>education is toned down and the focus is on the doctoral student being able to work on activities that require skills in research work but not a doctoral degree.</p>	<p>scientific and linguistic quality that have been defended and discussed at a licentiate seminar and examined and given a pass grade by an independent examiner.</p>
<p>Judgement and approach</p>	
<p>Intended learning outcomes</p>	<p>Assessment criteria with reference to numbering in eISP</p>
<p>Demonstrate the ability to make assessments of ethical aspects of his or her own research.</p> <p><i>Main differences in relation to the doctoral degree: The ability to make ethical research assessments is limited to their own research and not in general.</i></p>	<p>The goal has been achieved through the doctoral student having</p> <p>C1.1: demonstrated intellectual integrity in the sense that their own choices and positions have been justified and defended on the basis of independent critical thinking in relation to proven experience and scientific basis.</p> <p>C1.2: described how they ensured that their own scientific procedure in theory and practice was carried out in an honest and ethical manner.</p> <p>C1.3: reflected on possible existing or hypothetical ethical dilemmas related to their own research area or to scientific research in general, and reported on their own ethically independent stance in the existing or hypothetical situation.</p> <p>C1.4: been examined with a pass grade for intended learning outcomes in ethics in a suitable compulsory or optional course at third-cycle level. The research student is thus assumed to be able to describe basic theories in research ethics and relate these to their own approach and research work.</p>
<p>Demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.</p> <p><i>Main differences in relation to the doctoral degree: For the licentiate degree, only “insight” is required, as opposed to “in-depth insight” for the doctoral degree.</i></p>	<p>The goal has been achieved through the doctoral student having</p> <p>C2.1: presented concrete examples of how their own research results, and the research area in general, can contribute new knowledge to the research front in the area and justify its societal relevance.</p> <p>C2.2: critically reflected on limitations of their own research results, and the research area in general, in order to contribute to solving societally relevant problems, as well as identify possible situations where their own research results can be used in both a positive and negative way.</p> <p>C2.3: demonstrated good ability to reflect on how their own research results can contribute to sustainable societal development and can, where relevant, also link these to the prioritised global sustainable development goals.</p> <p>C2.4: described how their own actions and approach take into account the concept of sustainability.</p>
<p>Demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.</p> <p><i>Main differences in relation to the doctoral degree: The same requirement to be able to identify the need for additional knowledge with the addition of being able to take responsibility for their own knowledge</i></p>	<p>C3.1: by means of concrete examples, described how the lack of essential knowledge needed to carry out a task was rectified and how this affected the possibility of carrying out the task. This may involve widely differing tasks and knowledge, with the proviso that the third-cycle students themselves must have realised that knowledge was lacking and handled this with measures relevant to the purpose.</p> <p>C3.2: demonstrated insight that the knowledge front in higher education and research is in constant change and development and</p>

development, which may be considered to be implied for a doctoral degree.

that definitive answers cannot always be obtained, as well as the ability to determine whether certain knowledge already exists, for example by means of thorough and critical examination of existing scientific literature.

C3.3: demonstrated the ability to question, evaluate and adapt their perception of their own level of knowledge and ability in relation to the prevailing knowledge front.