# Degree project - Bachelor's Thesis

Examensarbete
16 credits

Programme course

TQXX10

Valid from: 2024 Spring semester

| **Determined by** | **Main field of study** | |
|---|---|---|
| Övrigt | see special list | |
| **Date determined** | **Course level** | **Progressive specialisation** |
| 2023-08-31 | First cycle | G2E |
| **Revised by** | **Disciplinary domain** | |
| | Natural sciences, Technology | |
| **Revision date** | **Subject group** | |
| | Other Subjects | |
| **Offered first time** | **Offered for the last time** | |
| 2009 | | |
| **Department** | **Replaced by** | |
| Tekniska fakultetens kansli | | |

# Specific information

filosofie kandidat, naturvetenskaplig kandidat, teknologie kandidat och kandidat utan förled

# Course offered for

- Bachelor's Programme in Biology
- Bachelor's Programme in Air Transportation and Logistics
- Bachelor's Programme in Graphic Design and Communication
- Bachelor's Programme in Programming
- Bachelor's Programme in Chemical Biology
- Bachelor's Programme in Chemistry - Molecular Design
- Bachelor's Programme in Civic Logistics
- Bachelor's Programme in Mathematics
- Bachelor's Programme in Animal psychology

# Entry requirements

To be qualified to conduct a degree project, the student must have completed at least 135 credits from courses within the programme. Furthermore, there is a requirement to have enough knowledge for the specific thesis work.

# Intended learning outcomes

### Knowledge of underlying sciences

The student is expected to demonstrate ability to:

- systematically integrate knowledge acquired during the studies
- apply methodological knowledge and understanding in the main field of study
- assimilate the content of relevant literature and relate the work to this

### Personal and professional skills

The student is expected to demonstrate ability to:

- plan, implement and present an independent degree project
- formulate issues, plan and carry out advanced tasks within specified time limits
- find and evaluate scientific literature
- express himself/herself professionally, in writing and orally
- critically examine and discuss an independent degree project presented in writing and orally
- make assessments with regard to relevant scientific, societal and ethical aspects

# Course content

Determined individually for each student in consultation with the examiner and supervisor. Work should be performed in the main field of study.

# Teaching and working methods

The course consists of an independent work. Each student/group of students is appointed a supervisor and an examiner.

For bachelor of arts and science, the students may select a degree project from each department's list. The projects may vary from year to year. A project may be carried out in groups according to instructions by the examiner. The work is done both individually and in groups under supervision.

The degree project is the final step before graduation.

# Examination

| | | | |
|---|---|---|---|
| AUSK | Attendance at two thesis presentations | 0.5 credits | D |
| OPPO | Opposition | 1.5 credits | U, G |
| UPG1 | Planning report, written report, oral presentation and reflection document | 14 credits | U, G |

Only degree projects at a level and extent equal to that of your personal degree project can be selected for opposition. The student must oppose at least one degree project.

Attendance at thesis presentations may be carried out from the fifth semester of the bachelor programme and is recorded in the course code TEXJOB until the thesis can be registered. Thesis presentation attendance can be done at degree projects at a level equal to or higher than your personal degree project.

The written report should consist of a manuscript ready for publication together with an individual document regarding the completed degree project.

The course is graded Pass/Fail.

# Grades

Two grade scale, older version, U, G

# Other information

The following course codes, depending on main field of study, are based on this syllabus:

TQBI10 - Biology
TQDV10 - Computer Science
TQFY10 - Physics
TQGD10 - Graphical Design and Communication
TQKE10 - Chemistry
TQKB10 - Chemical Biology
TQLO10 - Logistics
TQMA10 - Mathematics
TQPR10 - Programming

### About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is "Swedish", the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is "English", the course as a whole is taught in English. Examination language is English.
- If teaching language is "Swedish/English", the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

### Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under "Teaching and working methods". Please note, in a campus-based course occasional remote sessions could be included.

# Common rules

## Degree projects for Bachelor of Science in Engineering, Bachelor of Science (Technology), Bachelor of Science, Bachelor of Arts, and Bachelor without prefix

General provisions for the degree project are given here. The appropriate faculty programme board can provide further, programme-specific regulations, which are given in the programme syllabus and/or the course syllabus for the degree project. Information about application, reflection documents, possible examiners etc. can be found at Information.

### General provisions

To be awarded the degree of Bachelor of Science in Engineering, Bachelor of Science (Technology), Bachelor of Science, Bachelor of Arts or Bachelor without prefix it is required that the student has completed a degree project and achieved the Pass grade for it. The components of the degree project are described in the relevant course syllabus.

### Aim

The aim of the degree project is described in the relevant course syllabus https://liu.se/studieinfo/en.

### Extent

Requirements for the extent of the degree project for each type of degree are given in the syllabus of the study programme.

### Locations for a degree project

The work is carried out in the form of:

- an internal degree project located at one of the participating departments at LiU
- an external degree project located at, for example, a company, government agency, or other organisation in Sweden or abroad, that an examiner has assessed to be competent to manage a degree project that satisfies the requirements
- a degree project within an exchange agreement in association with study abroad, whereby all study results are to be credited to the student by the relevant faculty programme board.

The main subject areas that are permitted within each study programme are described in the programme syllabus. Any individual subjects that may be relevant to the main subject area are to be determined by the relevant faculty programme board.

The examiner for a degree project within a certain subject area are determined by

the faculty programme board that is responsible for general degrees within the main subject area. An up-to-date list is given at Information.

### Degree projects within agreements relating to study abroad

During study abroad that takes place within the framework of an agreement, the provisions of the host institute relating to degree projects are applied. The student is to consult the faculty programme board and together ensure that the proposed degree project is carried out in a main subject area that is permitted within the study programme. Approved main subject areas for degree projects are specified in the syllabus for the relevant programme.

A certificate confirming that the degree project has been approved and a copy of the degree project report (in PDF format) are to be submitted to the relevant faculty programme board.

### Selection of degree project

A degree project is to be selected in consultation with an examiner, who is also responsible that the specialisation, extent and level of the project satisfy the requirements specified in LiTH regulations.

In cases in which issues relating to work-related copyright, patenting or remuneration may arise, provisions governing these should be established in advance. A student working on a degree project may sign a confidentiality agreement in order to obtain access to confidential information necessary for the degree project. The supervisor and examiner, however, determine whether they are prepared to sign a confidentiality agreement, and thus the confidential information must not normally be of such nature that it is necessary to supervise or grade the work. The complete degree project report is to be published during the grading procedure, unless exceptional circumstances prevent this. If any part of the report should not be published, this must be approved in advance by the examiner and the relevant head of department. Note that final decisions relating to confidentiality are taken by an administrative court.

### Commencement of a degree project

Requirements that must be satisfied before a degree project can be started are given in the currently valid course syllabus, which can be obtained in the relevant programme syllabus at https://liu.se/studieinfo/en.

Notification of a degree project is to be carried out when the degree project starts, at Application. Registration of the degree project is to take place before work commences.

Before the start of the degree project, the examiner is to ensure that the student satisfies the conditions for commencement of the degree project within the relevant main subject area. Support in this can be obtained from the Study Administration Office, who checks the general requirements for starting the degree project.

The student is also to notify the relevant department of the start of the degree

project.

### Degree projects in collaboration with another student

In cases in which two students carry out a degree project together, the contribution of each student is to be specified. The extent of the work is to correspond to the extent of two individual degree projects. The examiner is to ensure that each student has contributed in a satisfactory manner to the work, and that each student satisfies the requirements for achieving a Pass grade for the degree project.

Degree projects carried out in collaboration between more than two students are not permitted.

### Examiners

The examiner must be employed as a teacher at LiU according to the LiU Regulations for Appointments Dnr LiU-2022-04445 (https://styrdokument.liu.se/Regelsamling/VisaBeslut/622784). The following teachers can be appointed as examiner: Professor (including Adjunct and Visiting Professor), Associate Professor (including Adjunct), Senior Lecturer (including Adjunct and Visiting Senior Lecturer), Research Fellow, Assistant Lecturer (including Adjunct and Visiting Assistant Lecturer), or Postdoc. The examiner must also have the expertise required to examine degree projects (for example through research, supervision or teaching) within the relevant main subject area, and be appointed by the faculty programme board. The faculty programme board can also appoint emerita/emeritus as examiner for a single thesis work.

The examiner is to:

- ensure before the start of the degree project that the student satisfies the conditions for commencement of the degree project within the relevant main subject area. The Study Administration Office is to check whether the commencement criteria are satisfied and inform the examiner of this.
- check whether special admission requirements (where relevant) are satisfied, for example that the student can demonstrate a certain degree of in-depth knowledge within the field relevant for the degree project
- determine the specialisation and principal work of the degree project, based on an assessment of whether the degree project will result in the learning outcomes of the course syllabus being satisfied
- in conjunction with the planning report, check that the student has registered for the degree project and that the student has a supervisor
- pass/fail the planning report
- be responsible that the supervisor or supervisors carry out their duties
- approve the work for presentation
- before the presentation, check that the proposed opponent satisfies the conditions for commencement of the degree project and has attended two report presentations
- pass/fail the presentation and the opposition to it
- approve a concluding reflection document

- ensure that a degree project that has been passed satisfies the learning outcomes of the course syllabus and other requirements, and award a grade to the degree project (either G = Pass, or U = Fail).

In cases in which a degree project is carried out jointly by two students with different main subject areas, one examiner in each main subject area must be appointed, where this is necessary.

### Supervisors

A student working on a degree project is to have access to an internal supervisor at the department at which the degree project has been registered. The internal supervisor is to have a degree that corresponds at least to the level of the degree project to be supervised. The internal supervisor may, in exceptional circumstances, be the same individual as the examiner. A decision of whether to allow this in a particular case is to be made by the relevant faculty programme board before the degree project is started. The supervisor is to ensure that the student obtains help with:

- expert support in general questions related to methods, specialist knowledge of the subject, and writing the report
- problem formulation, and setting the limits of the work
- scheduling and planning work, and selection of appropriate methods.

If the degree project is being carried out outside of LiTH, an external supervisor from the host is to be appointed.

### Planning report

During the first weeks of the degree project, the student is to draw up a planning report that contains:

- a preliminary title of the degree project
- planned literature foundation
- a preliminary statement of the research question, against the background of the literature foundation
- a preliminary description of the approach to be taken
- a schedule for the execution of the degree project, including suggested date for the presentation.

### Reporting

Both oral and written reports of the degree project are to be made, in Swedish or English. The faculty programme board may permit other languages to be used.

The oral report is to take place at a public presentation, unless there are exceptional circumstances that this should not be done. The written report is to be in the form of a professionally produced degree project report. The presentation and report are to follow the instructions given below.

### Presentation

The oral presentation is to take place when the examiner considers that the work

has been completed and is ready to be presented. The presentation is to take place on site at LiU at a time when other students can attend. This means that the presentation can take place on a date that the student has agreed with the examiner, normally between the re-examination period in August and midsummer, and after the student has attended other students' report presentations.

The oral presentation is to describe the background to the problem that has been studied, describe the methods used, and present the results and conclusions. The presentation is to be at a level suitable for everyone present, not just for specialists. After the oral presentation, the student is to counter any criticism that the opponent may raise, and allow other participants to pose questions. The presentation and the opposition are to be approved by the examiner. When any required adjustments of the report have been made, and the student has functioned as an opponent for another degree project, the degree project is reported as a passed course and the credits can be used to satisfy the requirements for a degree.

## Degree project report

The written degree project report is to be professionally written and comprehensive, and it is to demonstrate a scientific approach. The report must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc., of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations, such as undergraduate work, project reports, etc. (This is sometimes known as "self-plagiarism".) A failure to specify such sources may be regarded as attempted deception during examination.

The contents are to be easy to understand, and the way in which material is presented is important. It must describe the background to the project and the formulation of the research question. The choice of approach is to be clearly explained, and the report should make clear the coupling between the results and the conclusions. Commonly accepted scientific methods are to be used for processing the results. The discussion is to be comprehensive, and demonstrate that the student masters analytical thought processes. The report is to demonstrate good mastery of the literature in the field, and include an abstract. Reports that are principally written in Swedish should contain a summary in English. A publication-ready manuscript and a reflection document covering the work undertaken are to be submitted to the examiner within 10 working days of the oral presentation. Deviations from this limit may be granted by the examiner. If final versions of the required documents are not submitted as stipulated, the examiner may determine that the presentation is to be repeated.

The Faculty of Science and Engineering (Institute of Technology) at Linköping University recommends that degree project reports be published.

## Opposition

An oral opposition is to be carried out in connection with the student's own

presentation of his or her thesis, i.e. at the end of the own studies, and is to take place on site at LiU. The opposition is made on other degree projects at the same level and of the same extent as the own degree project. The opponent must also have attended two report presentations as a member of the audience. In a normal case, the number of opponents will be the same as the number of respondents. In exceptional cases, the examiner may decide that this is not to be the case. Acting as an opponent during the report presentation of another student is subject to points-based assessment as described in the course syllabus.

The opponent is to:

- discuss and comment on the selection of methods, results and (where relevant) data processing, conclusions, possible alternative solutions and conclusions, and the management of literature
- comment on the general arrangement of the degree project report and related, formal aspects of style, and comment on the oral presentation technique
- illuminate the strengths and weaknesses of the report.

The duration of the opposition should be approximately the same as that of the presentation, and it is to include a discussion in which the student presenting the report replies to and comments on the criticism raised by the opponent.

One week before the presentation, the opponent is to submit in writing to the examiner the important issues that will be discussed, and the structure of the opposition that will be taken. The opponent and the examiner discuss the structure that the opponent has drawn up.

### Attendance at presentations

A student is to attend presentations of degree project reports as described in the syllabus. The presentations attended must be at the same level or a higher level than the degree project of the student.

It is advantageous that one of the presentations attended is a licentiate degree seminar or a doctoral disputation. The student is responsible for ensuring that a certification of attendance at the presentation is obtained and passed to the departmental administrator for registration in Ladok. Attendance at such presentations is a component of the degree work that is subject to points-based assessment.

The occasions on which a student attends presentations are to be completed before the student presents the degree project report. The syllabus for the degree project describes the scheduling of the attendance at presentations.

The attendance at presentations is to take place on site at LiU. It is not possible to participate remotely.

### Reflection document

A document reflecting on the work that has been carried out is to be submitted to the examiner within 10 working days of the oral presentation. Instructions for

preparing a reflection document can be reached through Reflection document

### Grades

The degree project is graded as either Pass or Fail. In order for a student to obtain a pass grade for the degree project, all components must be completed and be awarded a pass grade.

### Right to obtain supervision

It is expected that the student complete and pass a degree project within specified time limits. The department is required to provide supervision for a maximum of 12 months after the student has registered the degree project in Ladok. The examiner may grant additional supervision after this period in special cases. If the examiner determines that supervision is to be ended, the degree project is to be awarded a Fail grade. The examiner does not have to fail the degree project if it is considered possible that the student can finish the thesis without further supervision.

If a degree project is awarded a Fail grade for the reason described above or for any other reason, the student is to be directed towards carrying out a further degree project. However, carrying out a new degree project means very limited opportunities for supervision.

### Quality assurance

The relevant faculty programme board has overall responsibility for the quality of study programmes. This responsibility covers also degree projects. Quality assurance is to be carried out as determined by the faculty board.

### Exemptions

If there are exceptional circumstances, an exemption can be granted from the above regulations.

Exemption to replace the oral opposition with a detailed written opposition can be granted after approval by the faculty programme board when all other elements for the degree have been fulfilled, the degree project has been submitted and there are exceptional circumstances. It is the examiner who applies to the faculty programme board for an exemption for written opposition.

Written opposition can be carried out in any of the following ways:

• The student makes a written opposition to a work done by another student, whose examiner then examines the opposition

• The student's examiner instructs the person in question to make a written opposition to a degree project that has already been examined by the examiner.

In the case of a written opposition, there is no need for an initial account of the structure of the opposition.

Exemption from conducting the oral opposition on site at LiU (and instead conducting it remotely) with reference to exceptional circumstances is given by

the examiner. Examples of exceptional circumstances are the lack of a visa to come to Sweden.

Exemption from carrying out presentation on site at LiU (and instead conducting it remotely) can be granted by the respective faculty programme board if there are exceptional circumstances. Examples of exceptional circumstances are the lack of a visa to come to Sweden. It is the examiner who applies to the faculty programme board for an exemption from carrying out presentation on site.

## Interruption in and deregistration from a course

The LiU decision, Guidelines concerning confirmation of participation in education, Dnr LiU-2020-02256 (https://styrdokument.liu.se/Regelsamling/VisaBeslut/764582), states that interruptions in study are to be recorded in Ladok. Thus, all students who do not participate in a course for which they have registered are therefore obliged to report the interruption so that this can be noted in Ladok. Deregistration from or interrupting a course is carried out using a Web-based form.

## Guidelines relating to examinations and examiners

For details, see Guidelines for education and examination for first-cycle and second-cycle education at Linköping University, Dnr LiU-2023-00379 (http://styrdokument.liu.se/Regelsamling/VisaBeslut/917592).

An examiner must be employed as a teacher at LiU according to the LiU Regulations for Appointments, Dnr LiU-2022-04445 (https://styrdokument.liu.se/Regelsamling/VisaBeslut/622784). For courses in second-cycle, the following teachers can be appointed as examiner: Professor (including Adjunct and Visiting Professor), Associate Professor (including Adjunct), Senior Lecturer (including Adjunct and Visiting Senior Lecturer), Research Fellow, or Postdoc. For courses in first-cycle, Assistant Lecturer (including Adjunct and Visiting Assistant Lecturer) can also be appointed as examiner in addition to those listed for second-cycle courses. In exceptional cases, a Part-time Lecturer can also be appointed as an examiner at both first- and second cycle, see Delegation of authority for the Board of Faculty of Science and Engineering.

## Forms of examination

### Grades

For degree projects and other independent work the grades Fail (U) and Pass (G) are to be used.

### Examination components

The following examination components and associated module codes are used at the Faculty of Science and Engineering as part of the degree project:

- Grades Fail (U) and Pass (G) are to be used for the examination component

assignment (UPG).
- Grades Fail (U) and Pass (G) are to be used for the examination components Opposition (OPPO) and Attendance at thesis presentation (AUSK).

For possibilities to alternative forms of examinations, the following applies (in accordance with the LiU Guidelines for education and examination for first-cycle and second-cycle education at Linköping University, Dnr LiU-2023-00379 http://styrdokument.liu.se/Regelsamling/VisaBeslut/917592):

- If the coordinator has recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.
- An examiner may also decide that an adapted examination or alternative form of examination if the examiner assessed that special circumstances prevail, and the examiner assesses that it is possible while maintaing the objectives of the course.

### Reporting of examination results

The examination results for a student are reported at the relevant department.

### Plagiarism

For examinations that involve the writing of reports, in cases in which it can be assumed that the student has had access to other sources (such as during project work, writing essays, etc.), the material submitted must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc. of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations, such as degree projects, project reports, etc. (this is sometimes known as "self-plagiarism").

A failure to specify such sources may be regarded as attempted deception during examination.

### Attempts to cheat

In the event of a suspected attempt by a student to cheat during an examination, or when study performance is to be assessed as specified in Chapter 10 of the Higher Education Ordinance, the examiner is to report this to the disciplinary board of the university. Possible consequences for the student are suspension from study and a formal warning. More information is available at Cheating, deception and plagiarism.

Linköping University has also produced a guide for teachers and students' use of generative AI in education (Dnr LiU-2023-02660). As a student, you are always expected to gain knowledge of what applies to each course (including the degree project). In general, clarity to where and how generative AI has been used is important.

## Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at https://styrdokument.liu.se/Regelsamling/Innehall.