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Regulation for the completion and examination of Bachelor's theses in MSc programmes in Engineering and Architecture

Policy document at Chalmers University of Technology

Contents

1 Background and requirements

The official language of communication at Chalmers is Swedish and this English version of the approved policy document is merely a translation. In the event of differences between the policy document in Swedish and the translation in English, the approved policy document in Swedish shall take precedence.

The regulation describes the completion and examination of Bachelor's theses in MSc programmes in Engineering and Architecture and is aimed at students, Heads of Programme, supervisors, examiners, coordinators and Assistant Heads of Department.

According to the present structure of MSc programmes in Engineering and Architecture at Chalmers, year three of all five-year professional programmes includes a thesis worth 15 higher education credits. This thesis is called the Bachelor's thesis and is also required for the bachelor's degree that can be obtained after the first three years.

In the text, the term MSc in Engineering programme is used to designate all MSc in Engineering programmes except Architecture and Engineering (TKATK), and the term Architecture programme is used for the Architecture (TKARK) and TKATK programmes, although TKATK is formally both an MSc in Engineering and an Architecture programme. TKATK leads to either an MSc in Engineering or an MSc in Architecture, depending on which Master's programme the student follows during the last two years of the five-year programme. To fully meet the objectives of the TKATK Bachelor's programme, the Bachelor's thesis needs to be an architectural design project (hereafter referred to as a design project) in which both engineering and architectural knowledge can be synthesised. The TKARK Bachelor's thesis also consists of an architectural design project, and as such the grouping of TKATK and TKARK as architectural programmes in this regulation makes sense.

Every department that has a Bachelor's thesis course for the MSc in Engineering programmes has a designated coordinator for coordination of Bachelor's theses, whereas for Bachelor's theses for the Architecture programmes the coordination responsibility lies with the examiner involved.

The regulation is intended to ensure that all students are treated equally regardless of their programme affiliation and, where applicable, their choice of Bachelor's thesis course. The regulation has been revised by education officers in Education Support and has been approved by the relevant Heads of Programme, Assistant Heads of Department and coordinators of the Bachelor's thesis course.

2 Bachelor's thesis courses in the MSc in Engineering programmes

The Bachelor's thesis for the MSc in Engineering programmes is carried out in project groups of 3 – 6 students. Each Bachelor's thesis group has a supervisor and an examiner. The supervisor and examiner may not be the same person. There is more information about roles and areas of responsibility in the Bachelor's thesis courses in annex 8.

The Bachelor's thesis should be written in Swedish but may be written in English if there are particular reasons for doing so. It is therefore important that students are aware of the language in which the Bachelor's thesis is to be written when they select the Bachelor's thesis in the Bachelor's thesis choice module. A thesis written in English is evaluated by the same criteria as theses written in Swedish.

2.1 Preparation, entry requirements, learning objectives and evaluation

Before the start of each course, important dates are updated on the Chalmers Education pages. Bachelor's theses for the MSc in Engineering programmes have common scheduled times of one full day and two half days, which are presented on the Education pages. The introduction to the Bachelor's thesis is held in study period 3, week 1, on Tuesday at the specified time slot in the schedule for each Bachelor's thesis course code. On this occasion, information is given on the execution of the project and the general skills specific to the Bachelor's thesis.

2.1.1 Entry requirements

For admission to the Bachelor's thesis, MSc in Engineering students must complete at least 105 credits of their first three years based on their current programme affiliation. This requirement must be met after study period 1 of year 3 has been entered into Ladok, but no later than when the selection of Bachelor's projects closes (for dates see the timetable on the Chalmers Education pages). MSc in Engineering students are responsible for only applying for projects for which they have the right prior knowledge.

2.1.2 Initiation and allocation in the MSc in Engineering programmes

The departments generate proposals for Bachelor's theses. Their proposals are reviewed by the Head of Programme and permitted/rejected for the programme concerned. The students can define and propose a Bachelor's thesis project based on their own ideas. The student should contact a teacher/researcher and/or the Bachelor's thesis coordinator of the appropriate department to find a supervisor for the project (for deadline see the Chalmers Education pages). Students' own proposals for Bachelor's thesis projects should be of the same quality as department proposals, and students should draw on the assistance of a prospective supervisor and/or examiner. Students should also contact the Head of Programme, who will assess whether the project is relevant for their programme. No more than half of the places in a Bachelor's thesis project are reserved for the students who made the proposal. The other places are open to other students in programmes where the

Bachelor's thesis project has been approved. All project proposals are made available to students, and the students then make a choice via the Chalmers Education pages.

The selection of projects must be done within the given time frame, and late choices may be made when the regular allocation is complete. The student can then choose from the projects allowed for their programme that have places left. The coordinator at Education Support will contact the student and offer them a place. The regular allocation is according to the principle that priority is given to the student who has most credits in their programme. In the event of an equal number of credits, lots are drawn for a decision to be reached. Due to there being more applicants than places on individual projects, at the end of the allocation students may end up without a place on any of the projects they selected. These students are contacted by the coordinator at Education Support via their email address as entered in Ladok and are invited to choose from the projects allowed for their programme that have places left. Allocation of these places is done according to the principle that the person who applied first is given the highest priority. Those who do not respond to the offer within the specified time will not be allocated a project place.

2.1.3 Purpose and learning objectives

The Bachelor's thesis courses in the MSc in Engineering programmes have syllabuses with shared content. The syllabuses are adopted by the Vice President for Education and Lifelong Learning. The purpose of the Bachelor's thesis is expressed in the syllabuses as follows:

> The Bachelor's thesis is intended to integrate, advance and develop the student's knowledge and skills in a specific section of what has been covered in courses previously completed within the programme. The Bachelor's thesis also aims to develop knowledge and skills in working methods applying an engineering and scientific approach.

The learning objectives are expressed as follows (what students should be able to do on completion of the course):

Knowledge, understanding, skill and ability

- express and specify a problem within the chosen subject
- plan a project to solve and report on the problem with given resources
- search for, compile and assess relevant literature and other background information
- integrate and develop knowledge relevant for the chosen project
- reflect on how the project group worked together to meet common goals
- document the execution of the project in the project diary
- communicate the results of the Bachelor's thesis work in relation to the chosen problem in written and oral form

Assessment skills and approach

- critically examine, evaluate and constructively challenge another project with respect to research question, execution and conclusions

- assess if societal and ethical aspects need to be considered for the chosen problem and, where relevant, analyse these aspects in the paper/report
- reflect on the need for further research and provide suggestions for future projects on the subject

2.1.4 Course evaluation, publication and archiving

As on other courses, students on Bachelor's thesis courses should have the opportunity to make comments on the course, including by means of a course survey and course evaluation meeting. The procedure for this process is described in a separate document ('Rutin för värdering av kandidat- och examensarbetskurser' – 'Procedure for assessment of Bachelor's thesis and degree project courses').

Theses are published electronically by placing the completed Bachelor's thesis in Chalmers' e-publication system. All co-authors of the Bachelor's thesis and the examiner need to approve publication. The archiving and any printing of the Bachelor's thesis are the responsibility of the department.

2.2 Execution

2.2.1 Supervision

Early in the process, the supervisor should communicate the scope of supervision and explain the role of the supervisor (see annex 8). The supervisor should also introduce **the group contract for Bachelor's theses** (see annex 1). The discussion between the students on the group contract can take place without the supervisor. The agreed rules of collaboration in the group contract should be made available to the supervisor, while the part about the level of ambition need not be made available.

The supervisor is responsible for regular meetings being held to give the students sufficient supervision and, if necessary, for a risk assessment to be made for components of the project's execution. The supervisor is also responsible for a mid-project meeting being held during or shortly after the examination period between study periods 3 and 4. At the mid-project meeting the group should present a progress report and also be given feedback by the supervisor. It is particularly important that the supervisor gives clear feedback to the group if its work is proceeding in such a way that the group's output risks being assessed as a fail. If necessary, the supervisor is also obliged to give such feedback to the group at other times during the course. The supervisor should also inform the examiner in such cases.

2.2.2 Planning and documentation

Each group must keep a **project diary** on an ongoing basis (annex 2). The project diary is used to monitor work in the group and is part of the basis for individual grading. The group must also write a **contribution report** (annex 2), which sets out the contribution each student has made to the Bachelor's thesis. The contribution report is needed to assess the contribution of each individual group member to different parts of the execution and

conclusions of the project. The group can choose whether the contribution report is to be part of the paper/report, part of the project diary or a free-standing document. The project diary and the contribution report are to be made available so that the supervisor can read through them before supervision meetings.

The group must write and submit a **planning report** (annex 3). The planning report should give a clear statement of the subject/problem the Bachelor's thesis will deal with, and how it will be addressed. In its planning report, the group should also address whether **societal and ethical aspects** need to be taken into account in the final paper/report and give its reasons for this. Support for students in making this analysis, and for the examiner in assessing it, is available in annex 7 and in the digital resources accessed via the Chalmers Education pages. Submission must be no later than study week 4 in study period 3. The examiner decides on the exact date and time and on the method for submitting the planning report.

2.2.3 General skills specific to the Bachelor's thesis

Decision C 2022-0003 states that the same general skills should be deployed in executing the Bachelor's thesis, or any other suitable course, for all MSc in Engineering and Architecture programmes. The purpose of this part is to support the students' work so that they are in a good position to complete their Bachelor's thesis. The general skills specific to the Bachelor's thesis consist of information and communication elements. These are described in the relevant section of the Chalmers Education pages and the course page in Canvas entitled 'Generella kompetenser i kandidatarbetet' ('General skills specific to the Bachelor's thesis'), which is accessible when the student is registered on a course code for the Bachelor's thesis. The general skills are handled by the Department of Communication and Learning in Science and must be noted as fulfilled for the examiner to approve the final grade of the Bachelor's thesis. The general skills must be put into practice in connection with a specific project. This means that for a student who has failed in the past and undertakes a new project in a later academic year, the general skills must be put into practice during the new project, regardless of whether some or all of those general skills were already achieved during the previous project.

2.2.4 Presentation and opposition

The department is responsible for arranging presentation times for the department's Bachelor's theses. The presentation and opposition take place at the end of study period 4, the week before the examination week. Opposition is primarily done on Bachelor's theses completed in the same department. However, departments with few Bachelor's theses can coordinate with other departments that have Bachelor's theses relating to the same programme or subject area. In addition to the presenting group and the opponents, the examiners of the presenting and opposing groups also attend, preferably along with the supervisor of the presenting group.

All students must participate actively in the presentation and opposition in order to be given an individual assessment. Groups that have four or more members are therefore divided into two presentation sessions (the students are divided into two sub-groups, and each sub-

group presents the whole project), while groups with three or fewer members are allotted one presentation session.

Each reporting session is 30 minutes; this period has to accommodate the presentation (15–20 min), opposition and any questions from the examiner and other participants. An opposition follows directly after each oral presentation. The opposing group (sub-group) has ten minutes for its opposition.

Since the opposition is assessed individually, and the time for oral opposition is short, each student must also write an individual opposition. The students in the opposing (sub-)group must each submit their written opposition to their examiner, their supervisor, the presenting group and the presenting group's supervisor at least three working days before the first presentation date (the exact date is specified on the Chalmers Education pages for Bachelor's theses). There is more information on **presentation** and **opposition** in annexes 5 and 6.

2.3 Examination

The Bachelor's thesis course is graded on an individual basis using the scale F, 3, 4, 5. The individual grade is based primarily on the group's performance but also on the individual's performance. The examiner and supervisor are responsible for there being supporting documentation for the grades set.

2.3.1 The group's performance

The assessment of the group's performance is the basis for the individual assessment and is called the base grade. The group must complete all components/submissions in order to pass. The base grade is based on the following four components:

Table 1. Parts of the base grade

Components/submissions considered in grades	**Examined on the basis of**	**Scale factor * points for component**	**Who makes the assessment?**
Planning report	Instructions for planning report – Annex 3	1*(0-10)	Examiner
Paper/Report	Assessment criteria for Bachelor's thesis (HISS)	4*(0-10)	Examiner
Product	Dependent on specialist subject	2*(0-10)	Examiner
Process	Project diary – annex 2 Supervisor's contact with the group	3*(0-10)	Supervisor

In the assessment of the Bachelor's thesis, points at component level are used instead of directly using the graded marking scale of F-3-4-5. The reason for this is to prevent the scale being too rough when the components are weighed together. Each component/submission is assessed on a component point scale of 0-10. The component points are linked to the graded marking scale of F-3-4-5 as follows: four points is the lower limit for grade 3, six points is the lower limit for grade 4 and eight points is the lower limit for grade 5.

The component points received are multiplied by the components scale factor so that they are weighted differently. After that, the points received for the four components are added up to obtain the total number of points. The group's total number of points can thus be a maximum of 100 points. The aggregate total points are then converted into a base grade, but with additions of + and – according to the following table.

Table 2. Conversion table from total points to base grade

Conversion table from total points to base grade										
Point limit	**p<40**	**40≤p<60**			**60≤p<80**			**80≤p<100**		
Grade	**F**	**3**			**4**			**5**		
Point limit		40≤p <47	47≤p <54	54≤p <60	60≤p <67	67≤p <74	74≤p <80	80≤p <87	87≤p <94	94≤p <100
Extra		-	None	+	-	None	+	-	None	+

2.3.1.1 Assessment of the planning report

The examiner assesses and grades the planning report and is responsible for speedy feedback to students, no later than within ten working days. This component includes the group's decision as to whether to take account of ethical and societal aspects in its paper/report. To aid their assessment, the examiner can use the annex Societal and Ethical Aspects – support for students' analysis and examiners' assessment (annex 7).

The planning report must be completed in a timely manner during the project. If it is not submitted by the due date, the group gets zero points for this part. The planning report must then be submitted at a later deadline agreed by the examiner and the group (but not more than a week or so later). If no planning report is submitted by then either, the members of the group may be failed on the course. If a substandard report is submitted by the normal deadline, the examiner must return it for submission by a second deadline. This is so that the planning process, which is so important for the work of the group, can actually take place. The revised planning report is then assessed according to the regular criteria, but after that there is a point deduction of five component points (i.e. the group can get at most five component points and the grade of 3 for the component – see table 1 Parts of Base Grade). If the planning report is still substandard by a second deadline, the members of the group may be failed on the course.

2.3.1.2 Assessment of the paper/report and the product

The group must submit its paper/report to the examiner at the end of study period 4, eight working days before the presentation days (the exact date is specified on the Chalmers Education pages). It is the version that is submitted on this occasion that is assessed and that also forms the basis for grading the group's performance. The paper/report is submitted to the opposing group at the same time. For information about the structure of the paper/report, see annex 4.

In the examination, the quality assessment of the written paper/report is linked to the learning objectives for the Bachelor's thesis. The assessment criteria for Bachelor's theses (HISS) are used as support in examining the paper/report.

If the examiner has made the assessment that an analysis of societal and ethical aspects is relevant, the analysis must be included in the paper/report. See annex 7 for information about how the analysis can be structured and how it is assessed.

The group is responsible for the paper following Chalmers' guiding principles as regards academic integrity and the use of AI tools (see the Chalmers Education pages). The examiner is responsible for having the paper/report checked in a plagiarism tool. A paper/report that contains plagiarism will not be awarded a pass. If the essay does not follow Chalmers' guidelines and rules regarding academic honesty and the use of AI tools, it may lead to disciplinary measures according to Chalmers' Rules of Discipline.

The product is scrutinised by the examiner in a subject-specific assessment. If the examiner assesses that there is no product in the project, 10 of the 20 possible points for this part are added to the assessment of the paper/report and the remaining 10 points are added to the assessment of the process.

2.3.1.3 Assessment of process

The process component makes up 30 per cent of the base grade and is examined by the supervisor. The supervisor's assessment is based on the group's project diary and the supervisor's contact with the group. In the process component, an assessment is made of how well the group handles teamwork among the members – both day-to-day collaboration and the group's interaction when faced with challenges. The learning objective 'Reflect on how the project group worked together to meet common goals' is examined within the process component. Read more in annex 2 about how the process is assessed and examined.

2.3.1.4 Failed group performance and submission of supplements

If the group performance is assessed as a fail, the group may be given the opportunity to submit a supplement within a period agreed by the examiner, the supervisor and the group. The highest grade that can be given to a group that has been failed after submitting a supplement is a grade 3. If the examiner assesses that the supplements necessary are so extensive that they make up the bulk of the work that should have been done in the project, no opportunity is given to submit a supplement. The students are assessed to have failed

and have the option to come back the next time the course is given. The examiner also has the option of giving individual students a pass grade even though the other students in the group are assessed to have failed.

2.3.2 The individual's performance

Every student must be given an individual grade. The starting point for the individual assessment is that every member of the group is at the base grade given to the group. Following the individual assessment, the grades in the group may vary. Two components are assessed individually: the individual's contribution to the group's performance as well as presentation and opposition.

Table 3. The parts of the individual grade

Components considered in grades	**Examined on the basis of**	**Impact on the individual's grade**	**Who makes the assessment?**
The individual's contribution to the group's process, collaboration and conclusions	Supervisor's contact with the group (annex 2) Project diary (annex 2) Contribution report (annex 2)	May have a substantial impact on the individual's grade	Supervisor
Presentation and opposition	Annexes 5 and 6	Together a maximum of +- 1/2 of a grade level.	Examiner

2.3.2.1 Assessment of the individual's contribution to the group's performance

The supervisor assesses how and to what extent each individual in the group has contributed to the group's performance. This is based on the supervisor's ongoing contact with the group and on the group's project diary and contribution report. See annex 2 for support in this assessment.

2.3.2.2 Assessment of presentation and opposition

The assessment of the student's performance in presentation and opposition, where emphasis is placed on the handling of questions during the opposition as this is where the student demonstrates that they have achieved the learning objectives, is combined with the individual grade achieved so far. If the individual grade borders on a higher or lower grade, this may affect the final grade. This means that, taken together, performance in presentation and opposition can affect the grade by at most +- 1/2 of a grade level. Read more in annexes 5 and 6.

2.3.2.3 Other supporting information for assessment of the individual's performance

The supervisor is free to have the members of the group make oral and also written assessments of their own and the other group members' performance in addition to what is entered in the project diary and contribution report. Such assessments can help the supervisor and examiner to set the individual grades. However, it is not the students who set grades, and for that reason there is no formal point assessment in how the examination is structured.

2.3.2.4 Failed individual performance and submission of supplements

A student in a group may be assessed to have failed, even when the group as a whole is passed, if the contribution report, the project diary and the supervisor's assessment are in agreement that the student concerned does not meet performance requirements. The most common reason for a student being assessed to have failed is that the student has not participated in the work to the extent expected. The student who has been failed has the option of coming back in a new project in a later run of the course.

Each student must complete the oral presentation and discussion to be passed. The course description specifies how a student can report an urgent valid reason for failing to do this. In the case of a valid reason, the department must give the student the opportunity to supplement their presentation and opposition before the end of the retake period in August. A student who does not submit a supplement will be deemed to have failed the course.

2.3.3 Feedback about base grades and individual grades

The examiner is responsible for the students being given feedback about base grades and individual grades. The examiner may delegate this to the supervisor. The supervisor is responsible for giving feedback about the individual's contribution to the group's process, collaboration and conclusions.

The examiner should be available on one occasion when grades are discussed. The supervisor should be consulted if there is a discussion about the grades of a particular group.

3 Bachelor's thesis courses in the Architecture programme

The Bachelor's thesis for TKARK is done as an individual project. The examiner organises supervision of the projects. The Bachelor's thesis must be written in Swedish.

3.1 Preparation, entry requirements, learning objectives and evaluation

Before the start of each course, important dates are updated on the Chalmers Education pages. Bachelor's theses for the programme are scheduled in Chalmers scheduling system.

3.1.1 Entry requirements

TKARK students must complete at least 120 credits of the first three years of the programme. This requirement must be met after study period 2 of year 3 has been entered into Ladok, but no later than the closing date of the application for Bachelor's thesis projects (for dates see the timetable on the Chalmers Education pages).

3.1.2 Application for Bachelor's theses for Architecture programmes

On the Architecture programmes, students only apply for each course code so that their fulfilment of entry requirements can be checked before the course code is entered into Ladok. Information about application can be found on the Chalmers Education pages.

3.1.3 Purpose and learning objectives

The Bachelor's thesis courses in the Architecture programmes take the form of a design project, which is reflected in the syllabus of the Bachelor's thesis course. The Bachelor's thesis course is worth 15 credits in the area of architectural design projects. The syllabuses are adopted by the Vice President for Education and Lifelong Learning. The syllabuses for the Bachelor's thesis express the purpose as follows:

> The Bachelor's thesis is intended to integrate, advance and develop the student's knowledge and skills by means of a design project in a specific area. The student should make use of what has been covered in previously completed courses within the programme. The student should demonstrate the ability to independently develop a complex design project with adequate use of methodologies and tools. In the project, the student should demonstrate the ability to work at different scales, from the overall scale of the city to the detail of an architectural site. The student should also demonstrate the ability to combine artistic and scientific working methods in a design project.

The learning objectives are expressed as follows (what students should be able to do on completion of the course):

> <u>Knowledge, understanding, skill and ability</u>
>
> - express and specify a problem within the chosen subject with the support of reference projects, literature and other background information
> - plan the work to design and present a relevant work process with a timetable and choose the methodologies and tools for the execution of the project

- perform and present a critical analysis of the architectural site in relation to the city and their interdependence
- design a proposal where the interaction between spatial, building and urban design is shaped into a whole that meets the requirement for sustainable and functional solutions of high quality and good design.
- communicate the conclusions of the Bachelor's thesis in relation to the chosen problem in written and oral form.

Assessment skills and approach

- critically examine, evaluate and constructively challenge another project as regards research question, execution and conclusions
- critically reflect on the methodologies chosen, the problem chosen for the realisation of the project and the conclusions
- reflect on the need for further research and provide suggestions for possible alternative further developments.

3.1.4 Course evaluation, publication and archiving

As on other courses, students on Bachelor's thesis courses should have the opportunity to make comments on the course, including by means of a course survey and course evaluation meeting. The procedure for this process is described in a separate document ('Rutin för värdering av kandidat- och examensarbetskurser' – 'Procedure for assessment of Bachelor's thesis and degree project courses').

Theses are published electronically by placing the completed Bachelor's thesis in Chalmers' e-publication system. The publication needs to be approved by both the student and the examiner. The archiving and any printing of the Bachelor's thesis are the responsibility of the department.

3.2 Execution

3.2.1 Supervision

The student is offered supervision in the main areas of the project by supervisors with broad experience and expertise in the field of urban planning, building design and the chosen field. The examiner should provide early information on the scope and structure of the supervision and the role of the supervisors. The course description describes the number of supervision sessions (both individual and group) to provide the students with the necessary support. If necessary, a risk assessment is done for components in the project's execution.

3.2.2 Planning and documentation

The planning of the work involved in the project is summarised in a planning report, which must be submitted according to the specifications in the course description (see also Annex

3). The work is checked at one or more interim reviews and ends with a presentation in written and oral form.

3.2.3 General skills specific to the Bachelor's thesis

Decision C 2022-0003 states that the same general skills should be deployed in executing the Bachelor's thesis, or any other suitable course, for all MSc in Engineering and Architecture programmes. The purpose of this part is to support the students' work so that they are in a good position to complete their Bachelor's thesis. The general skills specific to the Bachelor's thesis consist of information and communication elements. These are described on the Chalmers Education pages. For TKARK, elements of the generic skills will be provided in the framework of other courses.

3.2.4 Presentation and opposition

The Bachelor's thesis for TKARK is reported and presented in writing and orally and defended at a (review) seminar. The examiner is responsible for organising review seminar sessions. About 30 minutes are allocated to each project; this time is to accommodate the presentation (15–20 min), opposition and any questions from the examiner and other participants.
More information about the **presentation** and **opposition** is to be found in the course description.

3.3 Examination

The Bachelor's thesis course is graded on a Fail-Pass scale, and a Pass grade is obtained after all sub-components have been passed. The different sub-components are the planning report, the oral presentation of the project and the written project report. The examination also includes the student critically reviewing and being the opponent of another Bachelor's thesis at the review seminar. It is important that the drawings, images and texts, as well as the oral presentation, are presented in such a way that the work is accessible and understandable to an interested audience outside the school of architecture and the academic environment.
The course is assessed on the basis of three areas of expertise: in the field of urban planning, in building design and in the chosen subject.

3.3.1 Assessment of the planning report

The planning report should cover the project task, the chosen subject and context, the chosen methodologies and the scope of the project, together with a timetable. Submission requirements are detailed in the course description.

3.3.2 Assessment of the oral presentation

The Bachelor's thesis is presented orally with the support of illustrations, models and the like, and is defended at a review seminar. The student should demonstrate the ability to master urban planning and building design issues in a complex architectural project, with

adequate use of methodologies and tools. Exact requirements for the presentation are detailed in the course description.

3.3.3 Assessment of project reports

The project report should cover the work process and reflection on the project conclusions. The student must demonstrate the ability to describe and analyse their work process and the conditions for the execution of the project, which is presented through texts, drawings, images (including of models) in accordance with the submission requirements outlined in the course description.

The group is responsible for the project report following Chalmers' guiding principles as regards academic integrity and the use of AI tools (see the Chalmers Education pages).

3.3.4 Failed individual performance and submission of supplements

If the result is not passed during a course, a supplement must be submitted according to written instructions and assessed in the next retake period. If this supplement is not successful, and the submission of a further supplement is required, this is also communicated in writing. This supplement will be assessed in the following retake period. If the supplements are not sufficient to pass the course, the course may be repeated.

4 Bachelor's thesis courses in the Architecture and Engineering programme

The Bachelor's thesis for TKATK is carried out in project groups of two students in collaboration with a Master's student. In the final submission in the form of a project portfolio, students work individually. The examiner organises supervision of the projects. As the project is written and presented together with a Master's student, this is done in English.

4.1 Preparation, entry requirements, learning objectives and evaluation

Before the start of each course, important dates are updated on the Chalmers Education pages. Bachelor's theses for the programme are scheduled in Chalmers scheduling system.

4.1.1 Entry requirements

For admission to the Bachelor's thesis, TKARK students must complete at least 105 credits of the first three years of the programme. This requirement must be met after study period 1 of year 3 has been entered into Ladok, but no later than the closing date of the application for Bachelor's thesis projects (for dates see the timetable on the Chalmers Education pages).

4.1.2 Application for Bachelor's theses for Architecture programmes

On the Architecture programmes, students only apply for each course code so that their fulfilment of entry requirements can be checked before the course code is entered into Ladok. Information about application can be found on the Chalmers Education pages.

4.1.3 Purpose and learning objectives

The Bachelor's thesis courses in the Architecture programmes take the form of a design project, which is reflected in the syllabus of the Bachelor's thesis course. The Bachelor's thesis course is worth 15 credits in the area of architectural design projects. The syllabuses are adopted by the Vice President for Education and Lifelong Learning. The purpose of the Bachelor's thesis is expressed in the syllabuses as follows:

> The Bachelor's thesis in Architecture and Engineering summarises three years of studies in two different knowledge cultures and with different methodologies and tools. In particular, the work should highlight the strengths that the two cultures represent individually and together. This involves students integrating, advancing and developing their knowledge and skills in key architectural issues covered in previously completed courses in the programme. The Bachelor's thesis also aims to develop knowledge and skills in working methods applying an engineering and scientific approach.

The learning objectives are expressed as follows (what students should be able to do on completion of the course):

> <u>Knowledge, understanding, skill and ability</u>

- identify, express, specify and address a problem relevant to the design project within the assigned subject with the support of reference projects, literature and other background information
- plan the work according to a suggested work process with selected methodologies and tools for the execution of the project according to a timetable
- perform and present a critical analysis of the design project and its context in the city, and their interdependence
- design a proposal where the interaction between spatial and building design is shaped into a whole that meets requirements for sustainable and functional solutions of high quality
- present the Bachelor's thesis in relation to the chosen problem in written and oral form
- discuss and present alternative developments of the proposed solution to the task
- discuss orally and in dialogue with reviewers the findings, effects and possible further developments of the task.

Assessment skills and approach

- critically examine, evaluate and constructively challenge other Bachelor's theses with respect to research question, execution and suggestions
- assess the technical characteristics of the proposed design using relevant engineering science methodologies
- use a critically reflective approach to account for the methodologies and scope used to address the design problems
- present a critical reflection on the effects of the solution on the environment and users.

4.1.4 Course evaluation, publication and archiving

As with other courses, students on Bachelor's thesis courses should have the opportunity to make comments on the course, including by means of a course survey and course evaluation meeting. The procedure for this process is described in a separate document ('Rutin för värdering av kandidat- och examensarbetskurser' – 'Procedure for assessment of Bachelor's thesis and degree project courses').

Theses are published electronically by entering the completed Bachelor's thesis in Chalmers' e-publication system. All co-authors of the Bachelor's thesis and the examiner need to approve publication. The archiving and any printing of the Bachelor's thesis are the responsibility of the department.

4.2 Execution

4.2.1 Supervision

The student is offered supervision in the main areas of the project by supervisors with broad experience and expertise in architectural design and the chosen technical area. The examiner should provide early information on the scope and structure of the supervision and the role of the supervisors. The course description describes the number of supervision sessions (both individual and group) to provide the students with the necessary support. If necessary, a risk assessment is done for components in the project's execution.

The supervisor should communicate the scope of supervision and should also introduce the group contract for Bachelor's theses to their group (see annex 1). The discussion between the students on the group contract can take place without the supervisor. The agreed rules of collaboration in the group contract should be made available to the supervisor, while the part about the level of ambition need not be made available to them.

4.2.2 Planning and documentation

The design process follows predefined phases based on the given programme text (brief). The work is checked at one or more interim reviews and ends with a presentation in written and oral form. Finally, each student documents their project individually in the form of a portfolio submission.

4.2.3 General skills specific to the Bachelor's thesis

Decision C 2022-0003 states that the same general skills should be deployed in executing the Bachelor's thesis, or any other suitable course, for all MSc in Engineering and Architecture programmes. The purpose of this part is to support the students' work so that they are in a good position to complete their Bachelor's thesis. The general skills specific to the Bachelor's thesis consist of information and communication elements. These are described on the Chalmers Education pages. For TKATK, elements of the generic skills will be provided partly in the framework of other courses.

4.2.4 Presentation and opposition

The examiner is responsible for organising at least two occasions for presentation and opposition of the projects. One session focuses on the design project, and the other focuses on technical solutions in the chosen technical area. The presentations are attended by external reviewers. More information about the **presentation** and **opposition** is to be found in the course description.

The individual project portfolio is presented orally by each student to the examiner or designated teacher at a separate portfolio review.

4.3 Examination

The Bachelor's thesis course is graded on an individual basis, on a Fail-Pass scale, and a Pass grade is obtained after all sub-components have been passed. The sub-components are: Initial individual review of the student's previously completed design project (portfolio review), oral presentations of the project, written individual portfolio submission and final portfolio review. The examination will also include a critical review of other Bachelor's theses during the design process and/or of the proposal presented. The course is assessed on the basis of two areas of expertise: architectural design and the chosen technical area. Great emphasis is placed on the student's ability to present the project with physical models, drawings, images, text and speech so that it is easily accessible and understandable, and can serve as a basis for public debate.

Students are responsible for their theses following Chalmers' guiding principles as regards academic integrity and the use of AI tools (see the Chalmers Education pages).

4.3.1 Assessment of initial individual review of design projects previously completed by the student (portfolio review)

The Bachelor's thesis begins with a mandatory review of previously completed architecture projects. The purpose of the portfolio review is to be able to identify strengths and areas for development for the student while they are working on their Bachelor's thesis.

4.3.2 Assessment of oral presentations

The Bachelor's thesis is presented orally with the support of illustrations, models and the like, and is defended at a minimum of two review seminars. The emphasis is on the ability to present, discuss and critically reflect on the conclusions of the work. The student should demonstrate the ability to master issues in both their chosen technical area and in building design in a complex architectural project, with adequate use of methodologies and tools. Exact requirements for the presentations are detailed in the course description.

4.3.3 Assessment of written individual portfolio submission and final portfolio review

In particular, the assessment covers students' ability to present, discuss and critically reflect on their own working methods and the quality achieved, what questions were asked, what investigations were carried out, what alternative options there were and what considerations the design choices were based on.

4.3.4 Failed individual performance and submission of supplements

If the result is not passed during a course, a supplement must be submitted according to written instructions and assessed in the next retake period. If this supplement is not passed, and the submission of a further supplement is required, this is also communicated in writing. This supplement will be assessed in the following retake period. If the supplements are not sufficient to pass the course, the course may have to be repeated.

Annex 1 Group contract for Bachelor's thesis

Since, as group members, you may have different ideas about how your collaboration should work, you must draw up a contract in which you make clear what rules of collaboration apply and how you intend to handle any situation where someone does not comply with what you have agreed. Since you may also have different levels of ambition, the contract must also make clear your individual levels of ambition so that a very ambitious member of the group is able to collaborate with a somewhat less ambitious member without them having misplaced expectations of one another.

If you wish, you may use this draft contract as a basis, but you can also choose to draw up your own contract for your collaboration.

Contact details

NAME	**TELEPHONE NUMBER**	**EMAIL**

Rules of collaboration (please use more space if needed)

How do you handle ...	What do you choose to do?	Action on non-compliance
meetings, e.g. • booking procedure • meeting techniques • attendance • late arrivals • ...		
division of labour, e.g. • areas of responsibility • allocation of individual tasks • deadlines • ...		
decision-making, e.g. • When to apply majority decisions, consensus or allocation of decisions • documentation of decisions • ...		

time log and diary • how, who, when? • what? • praise and criticism • breach of contract terms? • ...		
document and file management • how, who? • version management? • ...		

Ambition

Express your common objective for this thesis in a couple of sentences. Try to say something about both your paper/report and any product.

Our objective is …

Level of ambition: How much effort does each of you intend to invest in this course?

Name	Moderate	A great deal	A very great deal

Do you have any common grade objective for this thesis? If you do, what is it? _____

Signatures of all group members:

Annex 2 Instructions for project diary and contribution report and for the supervisor's assessment of the individual's contribution to the group's process

Project diary
The project diary should be seen as a collective name for the following three documents, all of which are produced as part of every project.

1. **Project plan:** (Is produced as a single document in the initial phase of the project)
    - Description of the project's purpose and objectives, and of any restrictions in its scope.
    - Description of upcoming resource needs.
    - Presentation of allocation of roles in the group (division of responsibility)
    - Time and activity plan for the project.

2. **Time log:** (Written on an ongoing basis)

Time recording covering all group members that states the number of working hours devoted to the project along with the associated main activity during said period of time. The scope may be one entry per day.

3. **Diary:** (Written at least once a week)

The diary should describe, in chronological order, the phases in the project work, joint and individual work in the various tasks performed, problems that have arisen, suggestions of different solutions and reflections about them, and any solution implemented. Other information such as meetings, weekly planning, interim objectives, etc., may be included. The diary should be kept relatively continuously and the activities for a particular week should be written before the end of that week.

The diary may be kept as a Word document or some form of web-based document. The most suitable form for the time log is an Excel document. The form of document is decided at the first meeting between the supervisor and the project group.

Contribution report
The contribution report should be written on an ongoing basis and is a starting point for individual assessment. It may contain:

Areas of responsibility
- Planning
- Information gathering/reading component
- Methodologies – choice/development
- Execution

Contribution to problem-solving, synthesis and analysis

- Problem-solving
- Creativity, wealth of ideas
- Creating models
- Analysis of material connected with the project
- Contribution to discussion
- Conclusions

Main author of sections
- List of sections
- Any division of editorial responsibility should be stated

Assessment of process and of the individual's contribution to the group's process, collaboration and conclusions

The supervisor is responsible for grading of the process component, which makes up 30 per cent of the base grade. The assessment of students' understanding of the different components of the planning report should be done orally. This is done with the support of the project diary and contribution report. To make the assessment, either the supervisor sets aside two or more dedicated sessions with the group, or this is done on an ongoing basis during regular supervision meetings. This assessment may not be done by external parties such as the client for whom the students are writing their paper. Furthermore, the tutor should assess the group's process by checking the areas included in the group contract on an ongoing basis during the course (annex 1). Other questions to build on can be:

- How does the group handle deviations from the planned workflow?
- How do the students reflect on their collaboration in the group?
– How do students adapt their use of generative AI in line with guidelines?

The learning objective 'reflect on how the group has collaborated to fulfil common objectives' is examined within the process component.

The supervisor is also responsible for the part of the individual grade that is made up of the individual's contribution to the group's process, collaboration and results. The supervisor has their own contact on an ongoing basis with the group, the project diary and the contribution report as their basis for this assessment. It is important that during oral assessment sessions the tutor ensures that all group members contribute and are active so that an individual assessment can be made at the individual level.

Annex 3 Instructions for the planning report

The planning report should give a clear statement of the subject/problem the Bachelor's thesis will deal with, and how this will be done. The following headings and information should be included. Note that the following headings must be included irrespective of whether the study is wholly literature-based, contains an empirical investigation or is a design project. The planning report does not need to answer all of the following questions, but the students should consider these issues at an early stage in the project and cover more and more of them as they go along. It is a good idea for the students and supervisor to exchange a number of drafts of the planning report before it is submitted.

Title
The planning report should include a preliminary title.

Background
The background should contain reasons why the subject chosen is of interest from an academic perspective and/or from an engineering perspective or, where relevant, from the perspective of the client. In certain cases, this heading should include a brief history of the subject. After reading the background all readers should understand why the subject is relevant. The following issues should be considered:

What is the subject/problem to be examined? Why has the subject/problem come up? Why or for whom is it an interesting or relevant subject/problem? Can the specific subject/problem be related to a more general discussion?

Purpose
The purpose specifies what the outcome of the project is supposed to be and what kind of conclusion will be reached. A project can have several different purposes that are related to the subjects/problems presented in the background. In most cases, however, it is appropriate to only have a general purpose, which is then broken down into more detailed sections further into the process and paper/report of the Bachelor's thesis.

Problem/Task
This section is often the most important part of the planning report (and of the final paper/report). It aims to identify the question(s) to be addressed by the project. It is important that the group does a problem analysis even if a problem (task) is already specified in the project proposal. The reason is that the real primary problem often differs from the problem initially proposed by the client/proposer/customer. The problem analysis is also intended to break down the problem/task into smaller and more detailed sub-problems/sub-tasks, which can also lead to the formulation of sub-purposes. By doing this the students gain a much better understanding of the different aspects of the problem/task.

Without this information it is impossible to identify what information is required, what information sources are needed and what approaches are appropriate.

A good problem analysis that identifies sub-problems/sub-tasks and sub-purposes often builds on the use of theories and models from the literature. A review of the literature should therefore be carried out early on in the process.

Scope
The scope must address what parts of the problem will not be dealt with in the paper/report and the reason for this. The reasons given for the scope are important.

Methodology/Execution
How the group intends to conduct the work is their choice of methodology. In design-centred projects this may appear to be obvious, but there may be important choices of methodology in this case as well. Wholly literature-based Bachelor's theses are also feasible, but even a literature study should have an ordered and structured work process and methodology.

The methodology section should also describe how data is to be collected and how to establish the extent to which the purpose of the project has been fulfilled. In practical projects this may be by means of measurements of various types. It may also be by means of computer simulations. What aspects are important to establish whether the purpose of the project has been achieved? Data collection may also be an important part of testing or other evaluation of the product developed in a design-focused project.

Number of study objects/test cases and how are they selected? Type of investigation method/test methodology? How will the data/test results collected be analysed and presented? What does the process for the literature work look like?

Societal and ethical aspects – assessment of whether they need to be taken into account for the problem chosen
In the planning report the group is expected to write a brief text in which it assesses whether societal and ethical aspects need to be taken into account and analysed further in the paper/report. The group will benefit from using **annex 7** as support along with the digital resources available on the Chalmers Education pages about the Bachelor's thesis.

Timetable
This part of the planning report describes what is to be done and when it is to be done. The people to be contacted should also be stated here. The dates or at least the weeks when the students are to submit interim reports and the final presentation should be stated here. The timetable will obviously be fairly rough to begin with.

It is important to note that the activities in the project cannot be viewed sequentially as these activities are dependent on one another, which means that there will be a number of

iterations between them. It will only be possible to use the knowledge built up usefully by iterating between them. The same thinking also applies to report writing, i.e. the updating of one section also requires the updating of other sections. Report writing should therefore be done on an ongoing basis during the whole of the project.

Annex 4 Instructions for the paper/report

The outline of the paper/report builds on its subject and content; the chapters of the main part are arranged differently depending on the type of project the group is working on. For example, in a design-orientated project, a lot of emphasis is given to parts that are not included at all in a literature review. A basic model for this type of paper/report has the following structure.

Title page
Brief summary/Abstract
Contents
Introduction
Main section
Conclusion/Discussion
Sources
Annexes

In cases where an analysis of societal and ethical aspects has been deemed to be relevant, this analysis should be included in the paper/report. The analysis can either be placed as a specific text in some part of the report structure or be included throughout in, for example, the Introduction, Main Section and/or Conclusion/Discussion.

The Conclusion/Discussion should include a section where the group reflects on the need for further research and make proposals of future problem areas to be looked at within the subject.

For more information about formal requirements relating to Bachelor's theses, see the course page in Canvas 'Generella kompetenser i kandidatarbetet' ('General skills specific to the Bachelor's thesis'), which is accessible when the student is registered on a course code for the Bachelor's thesis, and also the Chalmers Writing Guide[1].

All papers/reports must have an abstract as well as a title in English and a brief summary in Swedish.

Unless there are compelling reasons for some other target audience, the paper/report should be aimed at other students with the same subject specialisation.

[1] https://writing.chalmers.se/

Annex 5 Instructions for and assessment of presentation

An oral presentation is included in the examination. This component is compulsory and is held by (sub-)group, i.e. a maximum of three students give a joint presentation.

Structure of the presentation
Each (sub-)group must present the work of the whole group orally and has 15–20 minutes at its disposal to do this. The oral presentation should be informative enough for other students on the same programme who have not read the paper/report also to be able to follow the presentation. Visual aids should be used to illustrate the presentation.

Assessment of the oral presentation
The examiner's assessment takes the following points into account:

Contents
The (sub-)group has made a good selection from the material in the paper/report and the project as a whole, and it has been presented in a way that is well adapted to the recipients, the situation and the specific subject area.

Structure
The content is well structured, and the presentation is therefore easy to follow. The introduction and conclusion are clearly marked and help the recipients to absorb the content. The different parts are well linked and together they form a unified whole. The transition between different speakers and between sections is well planned and does not lead to any disturbing breaks in the presentation.

Presentation technique
Each individual speaker in the group establishes and maintains good eye contact with the audience and speaks without notes, with the help of memory aids.

Visual material
The visual material (images, graphs, point lists, text) used is clear and does not contain too much information. The material is readily comprehensible. The speakers give a clear and accessible account of the material shown. The presentation of the visual material is logical and well conceived.

Keeping to time
The presentation is kept within the given time frame. The distribution between different group members is relatively even.

Dealing with issues
Individuals respond well to relevant questions.

Annex 6 Instructions for and assessment of opposition

Oral opposition
The opposing group presents and discusses its comments at the oral presentation. It highlights both what is good and what is less good in the Bachelor's thesis. The oral opposition is assessed individually, but the opposing group has to prepare its opposition jointly, and during the opposition session the group members have to collaborate in terms of asking questions and discussing the Bachelor's thesis.

The purpose of the opposition is to clarify and firmly establish the content of the paper/report and to make any supplementary points that are required for the discussion to be relevant to everyone in the room. To make the opposition work in an auditorium it is of the utmost importance that the opponents do not pitch the discussion at a detailed level.

Written opposition
The written individual opposition involves a review that sheds light on and discusses the merits and deficiencies of the paper/report. It has to shed light on the paper and discuss its content. The text itself is to be a free-standing document, 400 – 600 words long, in which comments have been worked on and summarised in a readily accessible way. The following points can serve as a basis for the review:

- The organisation and structure of the paper/report
- Definition of the problem
- Methodology/Execution
- Scope
- Theory
- Analysis
- Results and handling of results
- Design and formal aspects of the paper/report

Assessment of the opposition
Both the written and oral contributions are assessed by the examiner. A well conducted oral opposition is characterised by relevant questions, the follow-up of questions and the ability to create a context for the auditorium. The opposition should be introduced and concluded in a well thought out way and the content should be well adapted to the communication situation. Personal attacks and other hostile comments lead to a fail grade for the opposition.

A well conducted written opposition means that the text gives an overall picture of the paper/report and is able to shed light on the most important issues. An assessment is also made of whether the written opposition is a balanced and well formulated critique of the paper/report concerned, and how well the opponents have studied it.

Annex 7 Societal and ethical aspects – support for analysis and assessment

In the 2017/2018 academic year, the following learning objective was added to the syllabuses for the Bachelor's thesis:
− assess whether societal and ethical aspects[2] need to be taken into account for the problem chosen and, where relevant, analyse these aspects in the paper/report.

This annex is intended to provide support both for students in their analysis work and for examiners and supervisors in their assessment. There is also support in the form of short films about ethics on the Chalmers Education pages that students are encouraged to watch. In the examination, the group's performance has to be assessed in the planning report and, when considered relevant, also in the report (according to the HISS criteria), the presentation and the opposition.

In the planning report, the group should write a short text in which they assess whether **societal and ethical aspects** need to be taken into account and analysed further in the paper/report.

If the group reaches the conclusion that societal and ethical aspects do not need to be taken into account, the group must give the reason for this in the planning report. The examiner is responsible for assessing the text in the planning report based on how well the group discusses and draws conclusions about ethical and societal aspects of its own project. The examiner also makes their own assessment of the relevance of ethical and societal aspects in the project and then determines whether the students should also analyse such aspects in the paper/report. If this is the case, the examiner is also responsible for assessing that analysis, and this is done on the following basis:

− none of the obviously relevant ethical aspects (values) for the project have been missed;
− it includes a clear and distinct description of the ethical aspects (values) that are or could have been relevant;
− it discusses both advantages and disadvantages of the project from an ethical and societal perspective;
− it gives adequate reasons for any decisions that have been taken with regard to this.

The student group will benefit from using the decision analysis model set out below to achieve clarity and completeness. In certain cases, working with the decision analysis model can also enable students to choose methodologies (execution) or final objectives (outcomes) for the study that are less problematic and thereby reduce the original ethical problems. The

[2] Sometimes the concept values is used synonymously with aspects.

model can be used both to make an initial assessment in the planning report and then – if the examiner deems it to be relevant – in the paper/report. Note, however, that the students do not have to explain in the text how they went through each stage of the model but have instead to focus on the insights and conclusions to which the process may have led them. Depending on the conclusions reached by the students, it may be relevant to explain these in various sections of the report such as: introduction (background, reasons, scope), methodology, discussion.

Decision analysis model for critical thinking about ethical issues
This model is intended to be used in such a way that the group goes through the questions once, giving preliminary answers to them. When the group has done this, it can go through the questions again to analyse them in more depth.

1. Which ethical aspects (values) are relevant to the project?

There are a few key ethical aspects where it is always important to examine whether they are relevant and – if they are – to comply with them. These are that we should do no **harm**, that we should do **good**, and that we should not infringe on the **autonomy** and **privacy** of others. Doing good must be given a broad interpretation: both interdisciplinary and extradisciplinary benefits are relevant. For example, it may be the case that a project does not have any specific benefits for society, but there are still good reasons for executing it since it would add something of interest and relevance to basic research. There may be other relevant aspects to take into account depending on the project.

2. How can we execute our project so as to avoid ethical problems with our methodology?

Given that the group is going to execute a particular project, there can be a number of different ways of doing so, where some options for its execution are more problematic than others. One example is a project in which the students' issues can be examined by means of animal experiments. Here there should be a discussion as to whether the animal experiments can be replaced with other types of experiments, or can use fewer animals, make the experiment less painful, and so on. Another example is a project that has the aim of developing a technical solution to reduce the anxiety problems people experience. The students' intention is to test this solution on their friends and acquaintances. In such a project, it is important to be aware, and discuss, the fact that the methodology may lead to problems for the participants' well-being.

3. What benefit or ethical problems can there be with the probable result (outcome) of the project that should be taken into account?

When the project has been completed, it may benefit both research and society. It is important to describe the benefits in concrete terms and also to describe whether the completion of the project risks leading to harm in different ways. One example is a project that is executed in a city neighbourhood in order to increase the safety and participation of

residents by means of a resident-driven innovation. Here thought should be given to what is likely to happen after the completion of the project.

4. Who are affected by the execution of the project or by the probable conclusion (outcome) of the project? How are they affected? Are there ethical problems linked to this that should be taken into account?

In an ethical analysis of a project, it is of the utmost importance to consider who is affected by the project and how they are affected. For example, if a project is intended to modify crops genetically to make them more resistant to pesticides, one effect of this may be that when these crops are marketed, the farmers who work with these crops in poorer parts of the world will be severely disadvantaged (financially and/or physically) by it. As harm to groups that are already vulnerable can be particularly serious from an ethical perspective, it is important that careful consideration is given to this type of concern.

5. What should we do if we have not found any relevant ethical aspects (values) concerning the project?

If the student group has gone through steps 1–4 above and analysed its project and the project's possible effects without finding any relevant ethical or societal aspects, the group changes analysis level (system level). The project's intra- and extradisciplinary relevance can be assessed in different ways depending on the level at which it is analysed. As an example, the group's project is ultimately to contribute by adding an extra 'scalar boson' to the standard model. As such, the group's project probably does not trigger any relevant ethical aspects in its execution or its outcome. But it is still possible to imagine that, seen from a wider scientific perspective to which the students' project contributes, its outcome may have a number of different positive and negative implications for both research and society. Another example could be a project that aims to contribute to more efficient fuel use in lorries that may lead to fewer emissions and cheaper operation of the individual vehicle. Here a higher system level can be the role of diesel vehicles in a transport system, where negative consequences can be greater opportunity costs for the development of engines not run on fossil fuels. When the students have changed analysis level, they go through steps 1 to 4 again.

Annex 8 Descriptions of roles for Bachelor's theses in the MSc in Engineering programmes

The following is a starting point for what the different roles are responsible for in the Bachelor's thesis course. This may differ from one department to another, but the intention is that, for example, an examiner will have the same areas of responsibility as their counterpart in another department. One important starting point is that the supervisor and the examiner must not be the same person. In what follows, being responsible means that responsibility for the task is attached to the role, but the task may be delegated if necessary.

Supervisor

- Communicate the scope of supervision and the role of the supervisor to the students in the group and, if necessary, ensure that a risk assessment is made for components in the project's execution.
- Introduce the group contract/agreement (annex 1).
- Introduce the project diary and contribution report (annex 2).
- Be responsible for a mid-project meeting and an assessment meeting being held with the group.
- Carry out individual grading of the work process in the Bachelor's thesis (annex 2).
- Attend the group's presentation (and preferably also their opposition).
- Be responsible for regular meetings being held to give the students adequate supervision.

Examiner

- Be responsible for the project proposals maintaining good quality (before they are posted on the Study Portal and the Head of Programme is to review them).
- Inform the group of the date for and method for submission of the planning report (annex 3). Assess the planning report. Be responsible for the students being given feedback about the assessment of the planning report.
- Be responsible together with the departmental coordinator for arranging time slots for the presentation of the Bachelor's theses and for these to be communicated to the students in the project groups in the department.
- Attend the group's presentation and opposition.
- Carry out individual grading of the course in accordance with chapter 2.3 of the regulation for Bachelor's theses.
- Check that all parts of the general skills specific to the Bachelor's thesis have been approved before the reporting of the final grades can be done. Ensure that all students authorise or decline electronic publication of the report.
- Be responsible for the students being given information about their grades. The examiner should be available for a discussion about grades.

Coordinator

- Coordinate information and communication within the department regarding the Bachelor's thesis course.
- Communicate the scope of supervision and the role of the supervisor to the supervisors.
- Coordinate planning between the department's divisions regarding writing Bachelor's theses.
- Hold information about what projects in the department are student-initiated.
- Be responsible for projects being made accessible on the department's Canvas page.
- Be responsible for projects being entered in the Study Portal's module for Bachelor's thesis selection and arranging presentation sessions for the department's projects for the students before the selection period.
- Communicate with the coordinators during the allocation of Bachelor's theses.
- Be responsible together with the examiners in the department for arranging time slots for the presentation of the Bachelor's theses and that these are communicated to the students in the project groups in the department.
- Be responsible for ensuring that information sessions are organised at the start of courses for the department's Bachelor's theses. On these occasions, information is given on completion of all stages of the Bachelor's thesis, including for the general skills specific to the Bachelor's thesis, which is done with support from the Department of Communication and Learning in Science.

Assistant Head of Department (in certain departments the Assistant Head of Department and the Coordinator are the same person)

- Appoint the coordinator and inform the staff affected in the department of the role of the coordinator.
- Ultimately responsible for supervisors and examiners being appointed at the department.
- Ultimately responsible for project proposals being generated in the department.
- Become familiar with their department's Bachelor's thesis course ahead of agreement conversations with the educational areas.

Heads of Programme

- Responsible together with the Director of Studies for students being given information about the Bachelor's thesis course from the perspective of the programme regarding the main field of study and other practical questions.
- Present wishes about subjects for projects to departments.
- Check on the suitability of projects initiated by students in relation to the programme plan.
- Approve and reject proposed projects from departments for their programme.
- Decide on which students will be granted an exemption to complete a Bachelor's thesis.
- Follow up the Bachelor's thesis course, including with a course board meeting.

Director of Studies

- Be responsible together with the Head of Programme for students being given information about the Bachelor's thesis course from the perspective of the programme regarding the main field of study and other practical questions.
- Produce input for signature by the Head of Programme regarding any students who are being given exemptions to complete a Bachelor's thesis.
- Enter supplementary credits from credit transfers ahead of the allocation of Bachelor's theses.

Coordinator for allocation of Bachelor's theses

- Provide information about and decide the timetable for the Bachelor's thesis allocation process.
- Develop and update the model for Bachelor's thesis choice on an ongoing basis.
- Update key webpages on the Chalmers Education pages about the Bachelor's thesis.
- Allocate Bachelor's theses to students.
- Communicate with all groups affected in undergraduate studies at Chalmers during the allocation process.

Regarding reporting of grades

- The department administrators report the final grades for the Bachelor's thesis, entering them into Ladok after the examiner has both approved all parts of the project work and checked that all parts of the general skills specific to the Bachelor's thesis are approved.