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Instructions for Degree projects at Chalmers

Policy Document at Chalmers

Contents

1.	Background	3
2.	Title of the degree project	3
3.	Scope of the Degree project	3
4.	Aim and Learning Outcomes	4
5.	Examiner and Supervisor	6
6.	Conditions for Initiating the Degree Project	6
7.	Implementation	7
	7.1 Initiation	7
	7.2 Preparatory Administration	7
	7.3 Planning Report	8
	7.4 Supervision	8
	7.5 Intermediate Reports	8
	7.6 Publicity and Confidentiality	9
	7.7 Copyright	9
8.	Examination	9
	8.1 Grades	9
	8.1.1 Criteria for the grade Pass for degree projects covering 30 credits	10
	8.1.2 Criteria for the grade Pass for degree projects covering 60 credits	10
	8.2 Written Presentation	10
	8.3 E-publishing	10
	8.4 Oral Presentation	10
	8.5 Opposition	11
	8.6 Attendance at Other Presentation	11
9.	Checklist Roles and Responsibilities	11
	9.1 Examiner	11
	9.2 Director of Master's Programme(s)/Head of Programme	12
	9.3 Supervisor	12
	9.4 Student	13
	9.5 Student and Education Department	13
	APPENDIX 1. Guidelines for the assessment of quality of Degree projects at Chalmers' Master of Engineering/Architecture and master's programmes	15
	APPENDIX 2. Guidelines for the assessment of quality of Degree projects at Chalmers' BSc in Engineering programmes	20

1. Background

These regulations are a consolidation of previous regulations for degree projects and replace:

- Instructions for theses on the Master of Science in Engineering, Architecture and Master of Science Programmes (Ref C 2016-0973)
- Föreskrifter för examensarbeten för högskoleingenjörsexamen vid Chalmers tekniska högskola (Dnr C 2019-1523)
- Föreskrifter som gäller för självständigt arbete (examensarbete/ kandidatarbete) vid Sjöingenjör-, Sjökapten-, Internationell logistik- och Sjöfart och logistikprogrammen vid Chalmers tekniska högskola. (Dnr C 2020-1531)
- Riktlinjer för bedömning av kvalitet på examensarbete vid Chalmers högskoleingenjörsprogram. (Dnr C 2011-893)
- Riktlinjer för bedömning av kvalitet och betygsättning för självständigt arbete (examensarbete/kandidatarbete) vid Sjöingenjör-, Sjökapten-, Internationell logistik- och Sjöfart och logistikprogrammen vid Chalmers tekniska högskola. (Dnr C 2020-1532)

2. Title of the degree project

Chalmers' term for independent work (examensarbete) conducted within the framework of Master of Engineering, Architecture, or Master's Programmes is *masterexamensarbete*. The English term is *Master's thesis*. Chalmers also issues subject teaching degrees at advanced level, and the same regulations apply without specific mention in the following text.

Chalmers' term for independent work conducted within a BSc in Engineering programmes at Chalmers is *examensarbete*. The English term is *Degree project*.

Chalmers' term for independent work conducted within the Marine Engineering and Nautical science programmes is *examensarbete*. At the International Logistics programme, the term is *kandidatarbete*. The English term for both examensarbete and kandidatarbete is *Degree project*.

In order to simplify the writing in this document, both *Master's thesis (masterexamensarbete)* and *Degree project (examensarbete/kandidatarbete)* are referred to as a degree project in those cases all types of independent work are referred to. If only one of the kinds is intended, it is indicated separately.

3. Scope of the Degree project

As an individual educational provider, a so-called foundation university, Chalmers is to apply the Higher Education Ordinance (1993:100) Appendix 2, Examination Regulations. According to this, the following applies to Degree projects:

- For the Architecture-/Master of Engineering degree, the student must have completed an independent work (Degree project) of at least 30 credits.
- For the Master's degree, the student must have completed an independent work (Degree project) of at least 30 credits within the main field of study, as part of the course

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requirements. The independent work may be less than 30 credits but at least 15 credits if the student has already completed an independent work at an advanced level of at least 15 credits within the main field of study or equivalent from foreign education.

- For the BSc in Engineering degree, the student must have completed an independent work (Degree project) of at least 15 credits within the course requirements.
- For the Marine Engineering degree, the student must have completed an independent work (Degree project) of at least 15 credits within the course requirements.
- For the Nautical science degree, the student must have completed an independent work (Degree project) of at least 15 credits within the course requirements.
- For the Bachelor's degree, the student must have completed an independent work (Degree project) of at least 15 credits within the main field of study.

For Master of Engineering, Architecture, and Master's programs at Chalmers, the Degree project is a course of either 30 credits or 60 credits.

4. Aim and Learning Outcomes

The degree project aims for the student to develop in-depth knowledge, understanding, abilities, and approach within the context of the education. The degree project should be at the end of the education and involve a deepening and synthesis of previously acquired knowledge.

Degree project for Master of Engineering, Architecture, and Master's programs

In the degree project on a Master of Engineering/Architecture or Technology Master's program, the emphasis is on technical/scientific/artistic content. The overall goal of the degree project is for the student to demonstrate the knowledge and skills required to work independently as an engineer/architect/technology master.

The learning objectives for the master's thesis are based on the goals for the Master of Engineering /Architecture and Master's degrees in the national examination regulations and the local examination regulations for basic and advanced levels at Chalmers. Specific learning objectives to be fulfilled in the master's thesis include the student's ability to:

1. Use substantially in-depth knowledge within the main area/focus of the education in their project and in a scientifically correct way relate to current research and development work,
2. Choose and justify the choice of method in the project, within the main area/focus of the education,
3. Contribute to research and development work, and be able to relate their work to relevant scientific and technical/industrial/architectural context,
4. Critically, independently, and creatively identify, formulate and manage complex issues with a holistic perspective,
5. Plan and with adequate methods carry out qualified tasks within given frameworks, and being able to evaluate this work,
6. Create, analyze, and critically evaluate various technical/architectural solutions,
7. Critically and systematically integrate knowledge,
8. Clearly present and discuss their conclusions, as well as the knowledge and arguments underlying them, in English, both orally and in writing,
9. Identify, within the specific project, the questions that need to be answered for relevant societal, ethical, and ecological aspects to be considered,
10. Consider and discuss ethical aspects of research and development work, both in terms of *how* the work is conducted and *what* is investigated/developed,

11. Identify and discuss the need for further clarification of various aspects of the project before decision or implementation, where relevant.

Degree projects for BSc in Engineering programmes

A degree project for a BSc in Engineering program should reflect the nature of the education and demonstrate the student's ability to solve technical engineering problems.

The overall goal of the degree project is for the student to demonstrate the knowledge and skills required to work independently as a BSc of Engineering.

The learning objectives for the degree project are based on the goals for the BSc in Engineering degree in the national examination regulations and the local examination regulations for basic and advanced levels at Chalmers. Specific learning objectives for the degree project include the student's ability to:

1. Acquire and apply in-depth knowledge within the educational program's technical area, including in-depth insight into current development work,
2. Independently and creatively identify, formulate and handle issues with a holistic perspective, as well as analyze and evaluate various technical solutions,
3. Plan and with adequate methods carry out tasks within given frameworks,
4. Critically and systematically use knowledge, model, simulate, predict, and evaluate events based on relevant information,
5. Orally and in writing present and discuss information, problems, and solutions,
6. Within the framework of the specific degree project, identify questions regarding the role of technology in society, such as environmental and ethical aspects, as well as orally and in writing present and discuss information, problems, and solutions.

Degree projects for Marine Engineering, Nautical science, International Logistics and Maritime and Logistics programmes

The student should demonstrate the ability to critically and independently utilize, systematize, and reflect on experiences and relevant research results, thereby contributing to the development of professional practice and knowledge development within the profession, as well as reflect the nature of the education and show ability for professional problem solving.

The overall goal of the degree project is for the student to demonstrate the knowledge and skills required to work independently within their professional field.

The learning objectives for the degree project are based on the goals for the BSc in Nautical Science, BSc in Marine Engineering, and Bachelor's degrees in the national examination regulations and the local examination regulations for basic and advanced levels at Chalmers.

Specific learning objectives for the degree project include the student's ability to:

1. Acquire and apply in-depth knowledge within the educational program's technical area, including in-depth insight into current development work,
2. Independently and creatively identify, formulate and handle issues with a holistic perspective, as well as analyze and evaluate these at an advanced level within the subject area,

3. Plan and with adequate methods implement, analyze, and evaluate tasks within given frameworks and conduct theoretically and methodologically well-founded reasonings,
4. Identify suitable methods, apply and critically evaluate them in relation to a chosen scientific question,
5. Critically and systematically use knowledge, model, simulate, predict, and evaluate events based on relevant information,
6. Within the framework of the specific degree project, identify questions regarding the role of technology in society, considering environmental and ethical aspects, and
7. Orally and in writing present, for a given audience, discuss information, problems and solutions with high demands on structure, formality and language use, as well as defending a scientific investigation.

5. Examiner and Supervisor

For each degree project, an examiner should be appointed. The examiner is scientifically and qualitatively responsible for the degree project and for ensuring that the learning objectives are met. The examiner determines when the work can be approved and decides on the grade for the degree project.

Who can be appointed as an examiner is specified in the current *Rules of Procedure for teaching and research staff*. Each institution is responsible for appointing an examiner.

The examiner may appoint one or more supervisors. The supervisor is a scientific/technical/artistic support for the student and assists the student(s) with the practical processes.

For the **Nautical science, Marine Engineering and International Logistics programmes**, students choose supervisors within their chosen field of study, after which the institution appoints an examiner for each group.

If the degree project is carried out in an external organization, students typically also have a supervisor in the organization where the degree project is conducted. This supervisor is referred to as an external supervisor.

6. Conditions for Initiating the Degree Project

To initiate the degree project, the following credit requirements must be fulfilled within each program:

- Master of Engineering/Architecture program - at least 225 credits
- Students admitted only to the master's program - at least 45 credits
- BSc in Engineering programme - at least 120 credits
- Nautical science, Marine Engineering and International Logistics programmes - at least 120 credits. Credits from ship-based education are not included in these.

In the case of alternated theory and practice in the Nautical science and Marine Engineer programmes, at least 180 days and 150 days of ship-based education, respectively, are required (half of the total practical time).

In addition to the general requirements, necessary prerequisite courses for the specific degree project must be completed. The examiner formulates and verifies such prerequisites.

7. Implementation

The degree project is conducted in pairs or, in exceptional cases, individually.

In chapters 7-9, digital work cards are discussed. For students in maritime education, digital work cards are not used. Information about the degree project within these programmes can be found in Canvas.

7.1 Initiation

The degree project is usually initiated in one of the following ways:

- The student contacts a company or an institution with a proposal for the degree project. Simultaneously, the student contacts an examiner in the relevant subject area at Chalmers or the person responsible for degree projects at the institution.
- A company contacts Chalmers and proposes a task for a degree project.
- An institution suggests a degree project.

7.2 Preparatory Administration

The student(s) independently draft a written description of the degree project proposal. The description should provide sufficient information for the examiner to determine if the task is suitable for a degree project. The description should include background, purpose, objectives, and possibly methods. If applicable, the description can be prepared in consultation with the external organization where the degree project will be conducted.

The students fill in the relevant digital form for their program (accessible via chalmers.se):

- Master of Engineering, Architecture, and Master's programmes - Form Master Thesis
- BSc in Engineering programmes - Form for degree project Hing
- Nautical science, Marine Engineering and International Logistics programmes - Form for degree project SJO

The students send an email to the examiner with the proposal description and the completed form attached. The email is sent to masterthesis@chalmers.se.

The examiner assesses and approves that the proposed degree project's implementation leads to the development of the knowledge, abilities, and attitudes included in the degree project's learning objectives.

Master's programmes

For students at Master' programmes, the Director of Master's Programme (MPA) assesses and approves that the proposal falls within the main area of the master's programme. The MPA can decide that a specific degree project belongs to the main area of the master's program, even if the institution where the degree work is carried out does not belong to the main area according to decision C2008/280.

If the student(s) are admitted to the Master of Engineering/Architecture, the MPA must also assess and approve that the degree project is relevant with respect to the technical area/artistic area.

Students completing degree work as an independent course only need approval from the examiner.

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The examiner and Director of Master's Programme (MPA) sign the form.

BSc in Engineering programmes, Marine Engineering, Nautical science and International Logistics programmes

For students in the BSc in Engineering programmes, Marine Engineering, Nautical science and International Logistics programmes, the Head of Programme (PA) checks that the work falls within the program's technical area. The examiner assesses and approves that the proposed degree project's implementation leads to the development of the knowledge, skills, and attitudes included in the degree project's learning objectives, and that the work corresponds to 15 credits.

The examiner and the Head of Programme sign the form.

Registration Documents, etc.

The student(s) fill in the registration form (accessible via chalmers.se), after which registration takes place.

The student(s) fill in a digital work card (pdf) available on [Chalmers.se](https://chalmers.se). After each completed mandatory task, the student ensures that it is signed on the work card.

7.3 Planning Report

The student(s) write a planning report that specifies the problem description/task. The planning report should include background, preliminary purpose, objectives, limitations, method, and a timetable for the degree project's implementation. In the planning report, the student(s) should highlight the societal, ethical, and ecological aspects that need to be considered according to the learning objectives. If such aspects are not considered, it should be justified.

For a degree project comprising 60 credits, a sub-goal for 30 credits must be specified.

The planning report must be approved on the work card by both the examiner and any supervisor at the external organization. (Currently applicable)

7.4 Supervision

During the work, the student(s) are entitled to regular supervision and other resources needed for the project's implementation.

Supervision is provided by Chalmers' supervisors and possibly external supervisors. The external supervisor continuously supports students during the project's implementation and assists them with practical processes at the external organization.

7.5 Intermediate Reports

Students conducting degree projects of 60 credits must report the project's status to the examiner after twenty working weeks. Half of the effort required to achieve the learning objectives for a 60-credit degree project should then be completed. An approved intermediate report means that 30 credits are reported in Ladok.

For degree projects in the Marine Engineering, Nautical science, and International Logistics programmes, a mid-seminar is held in the middle of the course. The purpose of the mid-seminar is to clarify the progression and receive feedback from the examiner.

7.6 Publicity and Confidentiality

In accordance with Chalmers' regulations for education at the basic and advanced levels, the degree project must be presented openly both in writing and orally. The entire degree project should be public. The rule of publicity also applies to essays that are not published in full text (see section 8.3 on E-publishing).

In other respects, Chalmers' policies for publicity and confidentiality apply to the execution of the degree project and the publication of the essay.

7.7 Copyright

The copyright legislation has its starting point in the Act (1960:729) on copyright to literary and artistic works, the law colloquially referred to as the "Copyright Act". Copyright consists of financial and moral rights, both of which belong to the author. The author is the individual who has created the work. The student(s) is the author of the degree project.

The author can choose to transfer the financial rights in whole or in part by agreement to others, or to allow others to obtain rights to use them. Transfer means that the author renounces itself and hands over ownership of the financial rights on agreed terms.

The moral right includes the author's right to be mentioned in connection with their work, not to have to endure changes to the work, or that the work is published in contexts where the author's artistic or literary reputation or uniqueness may be at risk.

8. Examination

8.1 Grades

For degree projects in Master of Engineering, Architecture, and Master's programs, as well as in the Bachelor of Science in Engineering, grades are given on the UG scale with grades U (Fail) and G (Pass).

For degree projects in the Marine Engineering, Nautical science, International Logistics, and Maritime and Logistics programmes, grades are given on the TH scale, with grades U (Fail), 3 (Pass), 4 (Pass with Distinction), and 5 (Pass with Great Distinction).

To pass, the following is required:

- Approved planning report
- Approved presentation and defense
- Approved opposition during the presentation of other degree project
- Attendance at two other presentations
- Approved essay
- The student must have worked actively and independently, contributing to an extent equivalent to the current degree project's scope

For degree projects in the Marine Engineering, Nautical science, International Logistics programmes, and BSc in Engineering, the following is also required:

- Participation in a seminar on information literacy at Chalmers Library (general item). This item can also be completed as part of another course.
- Completion of any program-specific mandatory items.

8.1.1 Criteria for the grade Pass for degree projects covering 30 credits

For degree projects covering 30 credits, a Pass grade requires meeting at least the criteria for High Quality regarding all learning objectives (1-11). To meet the criteria for High Quality regarding learning objective 5, the student must have passed all moments listed above within a total timeframe of 30 working weeks. The examiner can, for special reasons, extend this time limit by 10 working weeks at a time.

8.1.2 Criteria for the grade Pass for degree projects covering 60 credits

For degree projects covering 60 credits, a Pass grade requires meeting the criteria for Very High Quality regarding learning objectives 1 and 2, and at least Pass for the other learning objectives (3-11). See appendix. To meet the criteria for High Quality regarding learning objective 5, the student must have passed all moments listed above within a total timeframe of 50 working weeks. The examiner can, for special reasons, extend this time limit by 10 working weeks at a time.

8.2 Written Presentation

For degree projects in Master of Engineering, Architecture, and Master's programmes, the essay must be written in English. Exceptions can only be made for Master's programmes where the language of instruction is Swedish. The essay should be formatted according to the "Formatting of Degree Projects" template at Chalmers. When two students complete a project together, the division of work should be clearly outlined in a contribution report, which is attached separately.

For degree projects in the BSc in Engineering programme, the essay is usually written in Swedish. In exceptional cases, it can be written in English.

For Nautical Science, International Logistics, and Marine Engineer programmes, the essay can be written in Swedish or English.

The essay should provide sufficient basis for the examiner to decide on a grade.

The examiner checks the essay against a plagiarism tool.

8.3 E-publishing

Chalmers degree projects must be registered and published electronically in Chalmers' e-publishing system. They become searchable in the Student Projects service and freely accessible and searchable via the Internet. The student can decline electronic publishing, but the registration (i.e., a searchable record without full text) is mandatory. For electronic publication of the full text, it is required that all authors have signed and approved the publication agreement found on the work card.

Registration and electronic publication of student projects are done by the respective institution, and the examiner is responsible for ensuring it is carried out.

8.4 Oral Presentation

At the time of the oral presentation, the essay should be completed but not yet published. This allows for incorporating feedback received during the presentation into the essay.

The oral presentation, including opposition, should take place at Chalmers. Additional presentations can, if desired, be held at the company.

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In exceptional cases, for example if the degree project was carried out abroad, the examiner may allow the presentation and opposition not to be held on site at Chalmers. In these cases, the presentation must be sent digitally and be open.

The presentation of the degree project should be announced at the relevant institution at least two weeks before the presentation date. The presentation should normally take place between August 15 and June 15 during normal working hours.

The oral presentation begins with the student(s) presenting their work. This is followed by opposition and discussion.

The presentation should take 45-60 minutes, with about one-third of the time devoted to opposition and discussion.

For degree projects in Master of Engineering, Architecture, and Master's programmes, the oral presentation should be in English. Exceptions can be granted for programs where the language of instruction is Swedish.

For degree projects in Marine Engineering, Nautical science, International Logistics programmes, and BSc in Engineering, the presentation should be in Swedish.

8.5 Opposition

The student must have participated as an opponent in another degree project. A maximum of two students can act as opponents in the same degree project. Opponents have 10 minutes, and the entire time should be utilized. After the opponents present their comments, others present can ask questions.

Opponents should review the essay. Language errors and minor remarks should be made in writing and handed over after the opposition.

The opponents' efforts are assessed by the examiner for the presented work, and approved opposition is signed on the work card.

The student(s) appoint opponents for their own work.

For Nautical science, Marine Engineering, and International Logistics programmes, opponents are appointed by the examiner.

8.6 Attendance at Other Presentation

The student must attend two other degree project presentations. The examiner for the presented degree project signs approved attendance on the work card.

9. Checklist Roles and Responsibilities

The following section describes the responsibilities associated with different roles during the degree project. In addition, there may be local variations in work procedures and actual implementation at the institution.

9.1 Examiner

It is the examiner's responsibility to:

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- Assess and approve the scientific and qualitative level of the degree project and to ensure that the implementation of the degree project leads to the student(s) developing the knowledge, skills, and attitudes included in the degree project's learning objectives.
- Inform themselves about *Riktlinjer för Chalmers samverkan med näringslivet* (C 2007/884) when collaborating with companies.
- Possibly appoint supervisors and provide necessary guidance for supervision, both for the internal supervisor at Chalmers and external supervisors.
- Ensure that the degree project can be conducted within the given resources.
- Verify that the student(s) meet the prerequisites and credit requirements.
- Approve the planning report.
- Inform the student(s) of Chalmers' policies for publicity and confidentiality.
- Offer regular supervision to the student(s).
- Approve the intermediate report after 20 working weeks (equivalent to 30 credits) for degree projects covering 60 credits, and report the approved presentation in Ladok.
- Check the essay with a plagiarism tool and take action if there is suspicion of plagiarism.
- Review the degree project and decide when the work can be presented.
- Ensure that the work is presented orally according to the applicable rules.
- Serve as the chairperson at the presentation.
- Approve opposition to the degree project.
- Approve attendance at the presentation session.
- Sign all approved subtasks and approve the degree project when all subtasks are approved.
- Register and publish the essay electronically in Chalmers' e-publishing system and as full text if the student has approved this.
- Ensure that the degree project is archived and filed.

9.2 Director of Master's Programme(s)/Head of Programme

The MPA is responsible for:

- Verifying that the degree project falls within the main area of the master's program.
- Checking and approving that the degree project belongs to the relevant technical area (equivalent) if the student intends to take the Master of Engineering/Architecture degree. The MPA can decide that a specific degree project belongs to the main area of the master's program even if the institution where the degree project is carried out does not belong to the main area, as decided in C2008/280.
- Signing the registration document.

For BSc in Engineering and Maritime programmes, the PA is responsible for:

- Checking and approving that the degree project belongs to the relevant technical area.
- Signing the registration document.

9.3 Supervisor

The supervisor is responsible for:

- Providing ongoing scientific/technical/artistic support to the student(s) during the degree project and assisting them with practical processes.

For BSc in Engineering and Maritime programmes, the supervisor is also responsible for:

- Supervising the planning report for the degree project.
- Supporting the student(s) in completing the essay.
- Reviewing the degree project and assessing whether the essay is of sufficient quality for submission to the examiner.

9.4 Student

The student(s) are responsible for:

- Finding a suitable issue for a degree project at a company or institution.
- Independently and in writing describe the proposal for the degree project.
- Contacting the relevant institution and examiner for the subject.
- For degree projects in master's programmes, contacting the examiner and master's program manager to have the registration document signed. If the student is admitted to the Master of Engineering/Architecture program, the Head of Program should also sign the document.
- For degree projects in BSc in Engineering, Marine Engineer, Nautical Science, International Logistics programmes, contacting the examiner and Head of Program to have the registration document signed.
- Completing the registration form.
- Print a work card from Studentportalen and keep this for the duration of execution of the degree project.
- Ensure that the work card is signed.
- Planning, conducting, and presenting the work independently according to the requirements described above.
- Take note of Chalmers' policies for publicity and confidentiality before starting the work.
- Take note of Chalmers' information on degree projects and designing the essay in accordance with Chalmers' rules for "Formatting of Degree Projects" and for publication in Chalmers Open Digital repository (ODR).
- Contacting the examiner for any potential agreement on the degree project.
- Contacting and appointing opponent(s) for the presentation of their own work.
- Delivering the work for publication in Chalmers Open Digital Repository.

9.5 Student and Education Department

The student and education department is responsible for establishing the degree project in Ladok.

APPENDIX 1. Guidelines for the assessment of quality of Degree projects at Chalmers' Master of Engineering/Architecture and master's programmes

In this appendix, the guidelines from the document *Riktlinjer för bedömning av kvalitet på examensarbete vid Chalmers civilingenjörs-/arkitekt- och masterprogram*, Dnr C2011/895 have been included.

These guidelines are based on the learning objectives for master's thesis in the Master of Engineering/Architecture and Technology masters at Chalmers, as outlined in Chalmers' local system of qualifications reference number C2007/723.

Ratings are given on a three-point scale: Poor Quality (BK), High Quality (HK), and Very High Quality (MHK).

Criteria for Very High Quality (MHK) are formulated only for specific learning objectives, those that are judged to be of a distinctive nature—essential deepening within the main field, advanced method knowledge, problem formulation, ability to create and evaluate new solutions, written presentation, and independence.

Learning Objectives with Quality Criteria Guidelines

Below, the criteria for Poor Quality (BK), High Quality (HK), and Very High Quality (MHK) are presented for each learning objective related to the degree project.

1. Utilize significantly deepened knowledge within the main field/specialization of education in one's project and scientifically relate to current research and development work

(MHK)	A significant deepening within the main field is demonstrated. The work utilizes knowledge from advanced-level studies within the main field. An extensive review of existing literature, along with a reflection on the work's connection to the forefront of knowledge within the main field, is present. The work contributes to new knowledge within the main field in a clearly documented manner. Additionally, the work demonstrates the ability to make an independent contribution to the field.
(HK)	A significant deepening within the main field is demonstrated. The work utilizes knowledge from advanced-level studies within the main field. A written review of existing literature, along with a reflection on the work's connection to the forefront of knowledge within the main field, is present.
(BK)	The connection of the work to the main field is weak and lacking. Advanced-level knowledge is not utilized. A literature review and reflection on the work's connection to the relevant knowledge area are absent.

2. Select and justify the choice of method in the project, within the main field/focus of the education

(MHK)	Relevant engineering or scientific theories and methods have been identified. A well-motivated choice of theory and method has been made. The selected theories and methods have been applied correctly and innovatively. The work demonstrates a deep and broad understanding of methodology.
(HK)	Potentially relevant engineering or scientific theories and methods have been identified. A well-justified choice of theory and method has been made. The chosen methods have been correctly applied.
(BK)	The selected theories and methods in the work lack relevance. The student has not shown that the chosen theories and methods are mastered.

3. Contribute to research and development work, and be able to relate one's work to relevant scientific and technical/industrial/architectural contexts

(HK)	The contribution to research and development work is clearly presented
(BK)	The work has been of such a nature that it is difficult to link it to research and development work

4. With a holistic view, critically, independently and creatively identify, formulate and handle complex issues

(MHK)	The work has a clear and distinct question or goal formulation. The question/goal formulation has been processed in an adequate, critical and reflective way. There is a clear link between the question/goal formulation, results, discussion and conclusions. The conclusions of the work are well-founded and correct.
(HK)	The work has a clear and distinct question. The question has been dealt with adequately. There is a clear link between the question, results and conclusions. The conclusions of the work are well-founded and correct.
(BK)	The work lacks or has an unclear question or goal formulation. Irrelevant method(s) are used. The work does not present an answer to the question or a result related to the goal. The conclusions are incorrect.

5. Plan and, by using adequate methods, carry out advanced tasks within given frameworks, and be able to evaluate this work

(HK)	A realistic plan for the work has been formulated. The deadlines that have been communicated and established have been adhered to during the execution of the work. Any necessary adjustments for implementation have been documented and communicated.
(BK)	The work has not adhered to the communicated and established deadlines, nor has documentation of relevant factors for deviations been presented.

6. Create, analyze, and critically evaluate different technical/architectural solutions

(MHK)	In the work, new solutions are developed that are analyzed and evaluated in a critical way. Alternative solutions have been developed and addressed in a relevant and comprehensive manner.
(HK)	In the work, solutions are developed that are analyzed and evaluated in a critical way.
(BK)	The work has not presented the above in a clear way.

7. Critically and systematically integrate knowledge

(MHK)	The work integrates knowledge and methods from several subjects in an innovative way.
(HK)	Relevant knowledge and methods have been acquired and applied.
(BK)	Areas relevant to the work are not addressed or used. Selected and acquired knowledge is not presented in a clear way and lacks justification.

8. In English, orally and in writing, clearly present and discuss conclusions, as well as the knowledge and definitions on which they are based

(MHK)	A very well-written essay. The overall coherence, structure, and layout are of very high quality.
(HK)	The work addresses the chosen area with relevant and accurate use of language. The overall coherence, structure, and layout are of good quality.
(BK)	The work lacks primarily adequate use of language, making it difficult to understand or evaluate the work based on the report.

9. Within the scope of the specific project, identify the questions that need to be answered to consider relevant societal, ethical, and ecological aspects.

(HK)	Presents and justifies chosen methods and discusses results from a perspective with a focus on sustainable development.
(BK)	Doesn't consider this aspect. Justification is not included in the planning report.

10. Consider and discuss ethical aspects of research and development work, both in terms of *how* the work is carried out, as well as *what* is investigated/developed.

(HK)	Presents possible ethical consequences of the conducted work.
(BK)	Does not consider this aspect. There is no justification provided in the planning report.

11. Identify and discuss the need for further clarification of various aspects of the project before making decisions or implementation, where relevant.

(HK)	The student has reflected on and reported on the other aspects that need to be highlighted/investigated before a decision or implementation.
(BK)	The student has not critically considered which other aspects need to be highlighted or investigated before making decisions or implementation.

Overall objectives

On completion of the degree project, the student should have demonstrated the knowledge and skills required to work independently

(MHK)	Independently carried out the degree project without extraordinary support or adaptations, or in any other way did not require extra-large resources for the implementation of the work.
(HK)	Carried out the work with reasonable support measures.
(BK)	There has been a great need for support. These support measures have been too extensive to make it likely that the student will be able to work independently after graduation.

APPENDIX 2. Guidelines for the assessment of quality of Degree projects at Chalmers' BSc in Engineering programmes

The guidelines are specifically intended to be a guide in cases where the quality of the degree project is low, and its approval can be questioned. The guidelines can also be a support when giving feedback to the student on his performance.

The guidelines are based on the learning objectives for degree work in BSc in Engineering programmes.

Criteria for poor quality/high quality are formulated for all learning objectives. Criteria for very high quality are formulated only for certain learning objectives, those that are judged to be of a distinctive nature - deepening in the technical area, problem formulation, ability to create and evaluate new solutions, integration of knowledge as well as written reporting and independence.

Lack of quality in terms of a learning objective or several learning objectives in combination may result in a failing grade for the entire work. It is the examiner's responsibility to make a balanced assessment.

Below are criteria for Poor Quality (BK), High Quality (HK) and Very High Quality (MHK) for each of the learning objectives for the degree project.

1. Ability to acquire and apply in-depth knowledge within the technical area of the education program including in-depth insight into current development work

(MHK)	In-depth knowledge in the field of technology is demonstrated. The work contributes in a clearly presented way to new knowledge or new application in the field of technology. The work demonstrates the ability to work independently within the area.
(HK)	In-depth knowledge in the field of technology is demonstrated. The work shows the ability to work independently in the area.
(BK)	The work does not use in-depth knowledge in the field of technology. The work's connection to the technology area is weak or absent.

2. The ability to independently and creatively identify, formulate, and manage issues with a holistic perspective, as well as analyze and evaluate various technical solutions

(MHK)	The work has a clear and defined question or goal formulation. The question/goal formulation has been processed in an adequate, critical, and reflective manner. In the work, new solutions are developed and analyzed and evaluated critically. Alternative solutions have been developed and treated in a relevant and exhaustive manner. There is a clear connection between question/goal formulation, results, discussions, and conclusions. The conclusions of the work are well substantiated and correct.
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(HK)	The work has a clear and defined question. The question has been processed adequately. In the work, solutions are developed that are analyzed and evaluated critically. The conclusions of the work are well substantiated and correct. There is a clear connection between question, objective, results, and conclusions.
(BK)	The work lacks or has an unclear question or goal formulation. Irrelevant method(s) are used. Alternative solutions have not been identified. The work does not present an answer to the question, or a result related to the goal. The conclusions are incorrect.

3. Ability to plan and with adequate methods carry out tasks within given frameworks

(HK)	A realistic plan for the work has been formulated. The timelines that have been communicated and established have been adhered to during the execution of the work. Any necessary adjustments made during the implementation have been documented and communicated.
(BK)	The work has not adhered to the communicated and established timelines. Furthermore, documentation of relevant factors for deviations has not been provided.

4. Ability to critically and systematically apply knowledge, as well as model, simulate, predict, and evaluate processes based on relevant information

(MHK)	The work integrates knowledge and methods from several subjects.
(HK)	Relevant knowledge and methods have been acquired and applied.
(BK)	Areas of relevance to the work are not addressed or used. Selected and acquired knowledge is not presented in a clear way and lacks justification.

5. Ability to orally and in writing be able to account for and discuss information, problems and solutions

(MHK)	A well written report. Overall, structure and layout are of high quality.
(HK)	The work addresses the chosen area with relevant and accurate language usage. The overall structure and layout are of good quality.
(BK)	The work lacks primarily adequate language treatment, making it difficult to understand or evaluate the work based on the report.

For the assessment of the written report, guidelines for evaluating Bachelor's thesis reports can serve as guidance. Refer to the document Bedömning av den skriftliga presentationen, rapport - HISS (version 202301-09).

<https://www.chalmers.se/utbildning/dina-studier/kandidat-och-examensarbete/kandidatarbete/#foreskrifter-skrivstod-och-bedomningskriterier>

6. Ability to identify questions within the scope of the specific degree project regarding the role of technology in society, such as environmental and ethical aspects

(HK)	Accounts for and justifies selected methods and discusses results based on a perspective with a focus on sustainable development. Accounts for possible ethical consequences of work performed.
(BK)	Does not consider these aspects even though the examiner deems them to be of importance for the degree project in question.

This learning objective may be irrelevant for certain degree projects. This assessment is made by the examiner.

7. After completing the degree project, the student should have demonstrated the knowledge and skills required to work independently

(MHK)	Independently carried out the degree project without extraordinary support or adaptations, or in any other way did not require extra-large resources for the implementation of the work.
(HK)	Carried out the work with reasonable support measures.
(BK)	There has been a great need for support. These support measures have been too extensive to make it likely that the student will be able to work independently after graduation.

APPENDIX 3. Guidelines for the assessment of quality and grading of Degree projects at Chalmers' Marine Engineering, Nautical science, and International Logistics programme

Background

This attachment outlines the criteria for assessing quality and grading for independent work (degree project/bachelor's thesis) in the Marine Engineering, Nautical science, and International Logistics programs at Chalmers University of Technology.

Assessment of degree projects

The grading is done according to the TH scale, with the grade levels Very Well Passed (5), Well Passed (4), Passed (3) and the grade Fail (U).

An degree project that does not meet the criteria for passing but is considered by the examiner to have the potential to do so with supplementary work is given such an opportunity. Supplementary work allows students to address identified deficiencies in their work and subsequently receive a grade of 3. If the supplementary work is not completed within six calendar months from the submission date of the work, it results in a failing grade.

A failing grade (U) means that the degree project holds such low quality that students cannot pass the thesis and must start over with a new project.

The assessment is based on nine evaluation criteria, each divided into three levels: Very High Quality (MHK), High Quality (HK), and Poor Quality (BK). To achieve the Very High Quality or High Quality levels, all criteria within the respective level must be met.

The grade is determined by the number of Very High Quality, High Quality, and Poor Quality assessments according to the table.

Learning Objectives for Degree Projects and Connection to Assessment Criteria

The overarching goal of the degree project is for the student to demonstrate the knowledge and skills necessary to work independently within their professional field.

The specific learning objectives for the degree project are that the student should be able to

1. acquire and apply in-depth knowledge within the subject area of the educational program, including a deeper understanding of current development work,
2. to independently and creatively identify, formulate, and manage research questions with a holistic perspective, and to analyze and evaluate these at an advanced level within the subject area,
3. plan and with adequate methods carry out, analyze and evaluate tasks within given frameworks and conduct theoretically and methodologically well-founded reasoning,
4. identify appropriate, apply and critically evaluate methods in relation to a chosen scientific question,

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5. critically and systematically apply knowledge, as well as model, simulate, predict, and evaluate processes based on relevant information,
6. within the scope of the specific degree project, be able to identify questions regarding the role of technology in society, considering environmental and ethical aspects, as well as
7. orally and in writing be able to present, for a given target group, discuss information, problems and solutions with high demands on structure, formality and language use, as well as defend a scientific investigation.

In the following table, the seven learning objectives are linked to the nine assessment criterias:

Learning objectives	Verified by assessment criteria
1	3
2	1, 2
3	7, 8
4	7
5	8
6	7, 8
7	4, 5, 6, 7, 8, 9

Assessment criteria

The assessment is based on the following nine criteria.

The criterion for work depth has been assessed to be such an important part that it results in double MHK or BK in the grade calculation. The criterion for the process does not include BK, as a deficient process cannot be completed afterwards.

Process

The interaction between the supervisor and the student is crucial during the course of the work. The supervisor provides ongoing support to the students throughout the implementation of the work and assists them with practical processes. The scope of supervision and communication methods should be agreed upon at the start of the project.

A realistic work plan should be developed, including activity breakdown and a timeline. During the project, students are expected to keep a work diary and time log.

Students are expected to carry out their thesis work independently, with minimal extensive support from the supervisor, following the standard process for thesis work.

Note: The assessment criteria are evaluated by the supervisor!

(MHK)	<ol style="list-style-type: none"> a) The contact with the supervisor has been <i>good and according to the agreement</i>. b) A realistic work plan has been formulated. The communicated and established deadlines have been <i>followed</i> during the implementation of the
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	<p>work. Any necessary adjustments have been documented and communicated.</p> <p>c) The degree project has been carried out <i>independently</i>, without extraordinary support or adaptations, and without requiring significantly large resources for its completion.</p>
(HK)	<p>a) The contact with the supervisor has been <i>good</i>.</p> <p>b) A realistic work plan has been formulated. The communicated and established deadlines <i>have been largely</i> followed during the implementation of the work.</p> <p>c) The work has been carried out with <i>reasonable support</i>.</p>
(BK)	<p>a) The contact with the supervisor has been <i>inadequate</i>.</p> <p>b) The work <i>has not</i> adhered to the communicated and established deadlines, nor has documentation of relevant factors for deviations been provided.</p> <p>c) There <i>has been a significant need</i> for support interventions. These interventions have been too extensive to reasonably expect the student to work independently after graduation.</p>

Overall impression

To ensure a favorable overall impression of the work, it is essential that the various parts of the report are interconnected, there is a coherent thread throughout the work, and the topic description is well-crafted. The report should adhere to the current template, be well-balanced, and written with clear language and a good layout.

The overall impression is something that can be assessed relatively quickly during an initial read-through, based on the actual impression the text conveys. This impression, which also encompasses subject understanding and accuracy, is then confirmed or reevaluated during a more thorough examination of the text.

(MHK)	<p>a) The topic description is <i>very good</i>, with a clear and well-connected result analysis that aligns with the purpose and conclusions. Relevant areas are covered and described in a <i>straightforward</i> manner. Additionally, the selection and scope are <i>clearly linked</i> to the study's purpose and other content in a well-balanced report.</p> <p>b) The conclusions are clearly tied to and <i>align very well</i> with the result analysis and the purpose/problem formulation.</p> <p>c) The research question/objective has been <i>critically and thoughtfully</i> addressed. There is a clear connection between the research question/objective, results, discussion, and conclusions. The conclusions drawn in the work are well-founded and accurate.</p> <p>d) Relevant knowledge and methods have been <i>acquired, applied, and justified</i>.</p> <p>e) The report is very <i>well-written</i>, with <i>high-quality</i> overall structure and layout.</p>
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	f) The report includes a summary that effectively reflects the entire content of the report in a <i>clear and engaging manner</i> .
(HK)	<p>a) The topic description is <i>good</i>. Many important areas are mentioned, but in some respects, the description is either <i>too narrow or too broad</i>, indicating a not entirely consistent selection in relation to the purpose and other content. There are only <i>isolated deficiencies</i> in result handling, but despite these, the analysis and report provide a balanced impression.</p> <p>b) The conclusions are clearly linked to the result analysis and the purpose/problem formulation, but they <i>partially focus differently</i> than what is stated in the purpose/problem formulation.</p> <p>c) The research question has been adequately addressed. There is a clear connection between the research question, results, and conclusions. The conclusions drawn in the work are well-founded and accurate.</p> <p>d) Relevant knowledge and methods have been <i>acquired and applied</i>.</p> <p>e) The work addresses the chosen area with <i>relevant and accurate</i> language use. The overall structure and layout are of <i>good</i> quality.</p> <p>f) The report includes a summary that effectively reflects the entire content of the report in a <i>clear manner</i>.</p>
(BK)	<p>a) The topic description is <i>deficient</i> because important areas are not described. The results and result analysis are not easily accessible during the initial read-through. The selection is evidently <i>poorly connected</i> to the purpose and other content, and furthermore, the balance in the report is <i>inadequate</i>.</p> <p>b) There is <i>no or very weak connection</i> and alignment between the conclusions and the purpose/problem formulation. Another issue may be that the purpose stated in the introduction does not correspond to what is discussed in the discussion/conclusions.</p> <p>c) The work <i>lacks a clear</i> research question or objective. Irrelevant method(s) are used. The work does not present an answer to the question, or a result related to the goal. The conclusions are incorrect.</p> <p>d) Relevant areas for the work are not <i>addressed or utilized</i>. The chosen and acquired knowledge is not clearly presented and lacks justification.</p> <p>e) The work <i>mainly lacks</i> adequate language treatment, overall structure, or layout to provide context for the reader.</p> <p>f) The report <i>does not</i> include a summary that effectively reflects the entire content of the report in a clear manner.</p>

In-depth knowledge

The purpose of the degree project is for the student to develop in-depth knowledge, understanding, skills, and approaches within the context of education. The degree project should be conducted towards the end of the program and involve a deepening and synthesis of previously acquired knowledge.

The work should be based on relevant subject specialization for the program and should be evident in the theory and discussion sections of the report, as well as in the introduction where students justify the purpose of the study. This demonstrates that students have engaged with relevant literature and research within the field.

NOTE: The criterion for the in-depth study of the work has been assessed as such an important aspect that it results in a double MHK or BK in the grading calculation.

(MHK) (x2)	<ul style="list-style-type: none"> a) The theoretical chapter demonstrates <i>in-depth subject knowledge</i>. Sources are <i>representative</i> of the subject area. The problematization of the research question is <i>profound</i> and indicates a strong understanding of the subject. b) <i>Significant specialization</i> within the main field is demonstrated. The work utilizes knowledge within the main field. c) An <i>extensive</i> review of existing literature, along with a <i>deep</i> reflection that justifies the work's connection to the cutting edge of knowledge within the main field. d) The contribution to research or development work is <i>clearly</i> presented.
(HK)	<ul style="list-style-type: none"> a) The theoretical chapter demonstrates <i>subject knowledge</i>. The sources are <i>representative</i> of the subject area. The problematization of the research question indicates a good understanding of the subject. b) An <i>in-depth</i> study of the main field of study is demonstrated. The work utilizes knowledge in the main field of study. c) A <i>written</i> review of existing literature and a reflection on the work's connection to the knowledge front within the main field are present. d) The contribution to research or development work is clearly presented.
(BK) (x2)	<ul style="list-style-type: none"> a) The theoretical chapter is <i>thin</i>. The sources used are <i>not representative</i> of the subject area. The problematization of the research question is <i>superficial</i>. b) An in-depth study of the main field of study is <i>missing or vague</i>. c) The work's connection to the main field is <i>weak or absent</i>. Knowledge within the main field is not effectively utilized. There is <i>no</i> comprehensive literature review or reflection on the work's connection to the relevant knowledge domain. d) The nature of the work has been such that it is <i>difficult</i> to link it to research or development work.

Formalities and structure

<p>The report should follow the current template for degree projects.</p> <p>To enhance readability, the report should be well-structured and maintain a consistent style. Chapters should be carefully balanced in terms of length and content, with clear and informative headings. Proper reference management is essential, adhering to the chosen citation system throughout. Tables and figures should be appropriately placed within the report and clearly referenced in the text. Images, graphs, and tables must comply with copyright laws. Sources should be clearly cited in the correct manner.</p>	
(MHK)	<ul style="list-style-type: none"> a) The report's length and formalities <i>adhere</i> to the writing guidelines and are effectively tailored to the task. The formalities enhance readability. b) The entire report is divided into <i>clear and well-balanced</i> chapters, sections and paragraphs. c) Reference management for tables, figures, and sources is <i>correct</i> and does not impact readability. Any paraphrasing is meticulously balanced. d) Tables and figures are <i>appropriately placed</i> within the text, <i>accompanied by clear and informative</i> table and figure headings, and are <i>well-commented</i> upon in the text.
(HK)	<ul style="list-style-type: none"> a) Length and formalities <i>generally adhere</i> to the instructions, but they are not always effectively adapted and therefore impact readability. For example, individual headings may be uninformative. b) The report is primarily divided into <i>clear</i> chapters, sections, and paragraphs, <i>but in some cases</i>, it consists of very short or long chapters, affecting the overall balance. c) The referencing is good, but there are <i>occasional shortcomings</i> in formality. Several cases of obvious paraphrasing but other than that good reference management. d) Tables and headings are <i>appropriately placed</i> within the text, but table and figure captions are somewhat <i>unclear</i>. Some tables and figures remain <i>insufficiently</i> discussed in the text.
(BK)	<ul style="list-style-type: none"> a) Length and formalities <i>do not adhere</i> to the instructions, and there are clear deficiencies, such as regarding the table of contents, layout, and/or page numbering. b) There are <i>significant flaws</i> in paragraph, chapter, and section management concerning their scope and the relationship between different parts. c) The referencing is <i>severely lacking</i>. For instance, references to tables/figures are missing in the text, and/or several sources are absent from the list of sources. d) Tables and figures are <i>incorrectly placed</i> and/or lack table or figure captions. Furthermore, explanatory comments are <i>frequently</i> missing in the text.

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Readability and language

Criteria for language and style do not mention the concept of "flow". This elusive aspect of text production is a result of factors such as language and style interacting with structure and content effectively to create the most effective reading experience possible. It is therefore when one perceives deficiencies in "flow" that one looks more closely at which factors or aspects are lacking for the text to flow effectively.	
(MHK)	<ul style="list-style-type: none"> a) The paragraph management is <i>very good</i>, adhering to the idea of one thought/idea per paragraph, and the paragraphs have clear core sentences. b) Sentence structure is <i>correct, formal, and efficient</i> (no incomplete sentences). There are only a few sentences with overly complex information structures (difficult-to-read sentences). c) The report is characterized by <i>accurate word choices</i>, and concepts are well-adapted and consistently used. d) The style level is <i>consistent and does not shift</i> between formal and informal styles. The report reflects a good awareness of applicable style requirements. e) The report has been <i>meticulously proofread</i> and contains very few or no ambiguities, construction errors, or spelling mistakes.
(HK)	<ul style="list-style-type: none"> a) The paragraph management is <i>good</i>, but there are some deficiencies due to certain paragraphs being short and poorly integrated with others, and/or because some paragraphs contain multiple themes without a cohesive topic sentence. b) Sentence structure is <i>good</i>, with only a few instances of incorrect or flawed sentence construction. In individual sections, sentences with problematic information structures occur. c) Word choices and concepts are handled <i>reasonably and appropriately</i>. d) The style of the report is at the <i>correct</i> level, and the writers adhere to applicable style requirements with few or no exceptions. e) The report has been <i>proofread</i> and contains few errors at word and sentence level.
(BK)	<ul style="list-style-type: none"> a) There are <i>significant deficiencies</i> in paragraph management, both concerning the formal structure and the content within the paragraphs. The unclear paragraph organization makes it challenging, in several cases, to understand what a paragraph/section/chapter is about. b) The text contains numerous instances of <i>incorrect</i> sentence construction, such as sentences without subjects and/or sentences consisting solely of subordinate clauses. Several sentences include personal pronouns (e.g., I, we, the candidates, etc.). c) The report is <i>inconsistent</i> regarding word choices and concepts. d) The report's style exhibits <i>obvious flaws</i>. The level of style is uneven and several distinctive style breaks characterize the text.

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	e) The report has <i>not been proofread</i> and consistently contains enough spelling and writing errors to disrupt and hinder the reading experience.
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Introduction, background, purpose and theory

<p>In the introduction, the student should outline the fundamental idea behind the work and justify its importance without delving into details.</p> <p>The background section should present previous scientific work and other information necessary for the reader to understand the rest of the report. Additionally, the presented work should be contextualized to highlight its unique contribution.</p> <p>The purpose should demonstrate what this specific study aims to achieve. The study's purpose is never for students to pass the course or deepen their own knowledge.</p> <p>The theory chapter should include the theoretical foundation that the reader needs to comprehend the specific subject. Depending on the scope and nature of the degree project, the theory chapter can either be integrated into the background or exist as a separate section. It should be tailored to the target audience.</p>	
(MHK)	<ul style="list-style-type: none"> a) A <i>clear thread</i> that allows the reader to easily and clearly understand the fundamental idea, motivation behind the study, and its unique contribution. b) The purpose of the study is <i>clearly stated and well-defined</i>. c) The theory is relevant in relation to the purpose and background, making the reader well-versed in the subject. It is up-to-date, supported by relevant scientific literature. d) Scientific sources have been used, with the majority consisting of scientific articles and/or reports.
(HK)	<ul style="list-style-type: none"> a) The fundamental idea, motivation behind the study, and unique contribution <i>do not really align</i>. The study's motivation is unclear or somewhat ambiguously defined in terms of its unique contribution. The thread connecting these elements is deficient or unclear in certain respects. b) The purpose of the study is clear, but <i>the delimitation is somewhat vague</i>. c) The theory is relevant in relation to the purpose and background, but it is either <i>too detailed or too superficial</i>. d) Scientific sources have been used.
(BK)	<ul style="list-style-type: none"> a) A clear thread is missing; the background, purpose, and theory <i>do not align</i>. b) The purpose is <i>unclear or incorrect</i> (the purpose is 'to pass the course' or similar). c) The theory is <i>not sufficiently</i> substantiated or is 'out-of-date'. d) References are not relevant or are missing.

Research question, method and results

The research question consists of several specific questions that the report aims to answer. Typically, it is formulated as a main question along with several sub-questions.

In the methodology chapter, the choice of method is briefly justified as appropriate and reasonable in relation to the purpose and research question, without delving into deeper discussion. The execution is described clearly and systematically, including details such as participants, selection criteria, time, and location.

In the results chapter, relevant data collected using selected methods is presented in a clear and structured manner, without discussion in qualitative methods. In quantitative studies, integration of results and analysis is permissible. Interviews provide raw data that should be analyzed in some way, not merely presented.

Within the context of the specific degree project, students should be able to identify questions related to the role of technology in society, considering environmental and ethical aspects.

(MHK)	<ul style="list-style-type: none"> a) The work has a clear and well-defined research question that <i>covers the entire purpose</i>. b) Potentially relevant engineering or scientific theories and methods have been used. The choice of method is relevant and reasonable in relation to the purpose and research question. c) The selected method has been applied <i>correctly and/or innovatively</i>. The work demonstrates <i>deep and broad</i> methodological knowledge. d) The execution is <i>accurately, systematically, and comprehensively</i> presented. e) A <i>well-executed</i> data collection of high quality. f) The presentation of results is <i>correct</i> and well-executed. Together with the selection of tables, figures, and examples, the results presentation forms a <i>convincing whole</i>. g) If possible, the research question <i>highlights</i> the current problem regarding the role of technology in society, considering environmental and ethical aspects. h) The report reflects an ethically sound approach to oral sources.
(HK)	<ul style="list-style-type: none"> a) The work has a clear and well-defined research question, but it <i>does not fully cover</i> the purpose. b) Potentially relevant engineering or scientific theories and methods have been used. The choice of method is relevant and reasonable in relation to the purpose and research question, but <i>better alternative methods exist</i>. c) The selected method has been applied <i>correctly</i>. The work demonstrates <i>some</i> methodological knowledge. d) The execution is presented, but there are <i>some deficiencies</i> in correctness, structure, or comprehensiveness. e) Good data collection, albeit with <i>varying quality and scope</i> (limited and isolated deficiencies).

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	<p>f) The presentation of results is <i>mainly correct</i> and well-executed, but occasional flaws affect overall coherence and credibility. Furthermore, the interaction between text, figures, and tables is <i>sometimes incomplete</i>.</p> <p>g) If possible, the research question <i>partially highlights</i> the current problem regarding the role of technology in society, considering environmental and ethical aspects.</p> <p>h) The report reflects an ethically sound approach to oral sources.</p>
(BK)	<p>a) The work's research question is <i>unclear and/or not well-defined</i>.</p> <p>b) The chosen theories and methods <i>lack relevance</i>. The method is inappropriate in relation to the purpose/research question.</p> <p>c) The student has <i>not</i> demonstrated mastery of the selected theories and methods.</p> <p>d) The execution is <i>deficient</i> and/or inadequately presented.</p> <p>e) Only a <i>few sources</i> are used. Alternatively, the data collection is of <i>insufficient</i> quality, for example due to relying on low-credibility internet sources.</p> <p>f) <i>Incomplete and incorrect</i> presentation of results with significant deficiencies, extending beyond the lack of coherence between text, figures, and tables.</p> <p>g) The research question <i>does not</i> adequately address the current problem regarding the role of technology in society, considering environmental and ethical aspects, even though it is possible.</p> <p>h) The report does not consistently demonstrate an ethically sound approach to oral sources.</p>

Discussions and conclusions

In the discussion chapter, the results presented in the results chapter should be discussed in relation to theory and previous research. While this chapter allows for personal thoughts, they should not be overly speculative in relation to theory, prior research, and results.

Critical examination and discussion of data and results are essential.

Additionally, the student should, through a method discussion, discuss the method's advantages and disadvantages, as well as its reliability (considering the concepts of validity and reliability where applicable).

Based on the results obtained and the discussion conducted, conclusions should be formulated in a relatively concise chapter. These conclusions should address the research questions posed and provide suggestions for further work in the field.

In the report's discussion chapter, when possible, results should also be discussed in terms of technology's role in society, considering environmental and ethical aspects.

(MHK)	<p>a) The argumentation is <i>factual, well-structured, and well-balanced</i>. It is supported by accurate content and relevant references, and it is reinforced by clear examples and the presentation of results.</p>
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	<ul style="list-style-type: none"> b) The results are critically analyzed and evaluated. <i>Alternative hypotheses have been formulated</i> and treated in a relevant manner. c) The method discussion includes the advantages and disadvantages of the chosen method in relation to the results <i>and any alternative methods</i>. The method's reliability is critically discussed. d) The conclusions are <i>well-founded</i>, clear, and answer the research question. e) The role of technology in society with consideration of environmental and ethical aspects is <i>discussed (where applicable)</i>.
(HK)	<ul style="list-style-type: none"> a) The argumentation is <i>factual, but there are some deficiencies</i> in terms of structure and support for the arguments presented. The writers manage to adjust the strength of different statements to advance the argumentation. b) The results are analyzed and evaluated critically. c) The method discussion includes the chosen method's advantages and disadvantages in relation to the results. The method's reliability is discussed. d) The conclusions are <i>well-founded</i> and largely address the study's research question. e) The role of technology in society, considering environmental and ethical aspects, is <i>superficially discussed (where applicable)</i>.
(BK)	<ul style="list-style-type: none"> a) The argumentation is <i>poorly substantiated</i>. Statements lack support, and too many categorical statements are made. b) The results are not critically analyzed and evaluated. c) The method discussion does <i>not</i> include the chosen method's advantages and disadvantages in relation to the results. The method's reliability is not discussed. d) The conclusions are <i>inadequately supported</i> and/or do not address the study's research question. e) The role of technology in society, considering environmental and ethical aspects, is <i>not discussed (where applicable)</i>.

Oral presentation and Opposition

Presentations and oppositions should be conducted according to instructions.

The oral presentation should be comprehensive enough that even students from the same program who have not read the report can follow along during the presentation and participate in the subsequent discussion. Visual aids should be used to illustrate the presentation. It is essential that the presentation has relevant content, is of an appropriate length, and is delivered in a way that effectively conveys the message to the audience.

A well-executed opposition is characterized by relevant questions, follow-up questions, and the ability to create context for the audience. The opposition should be initiated and concluded thoughtfully, with content well-suited to the communication situation. Personal attacks and insults result in immediate disqualification.

CHALMERS

Presentation:

- A *good selection* of material from the report and the bachelor's thesis/degree project in its entirety.
- The work is presented in a *manner well-adapted* to the audience, situation, and the specific subject area
- *The content is well-structured*, making the presentation easy to follow. Clear markers for the introduction and conclusion facilitate the audience's understanding of the content. The different parts are well-connected, creating a cohesive presentation.
- The *visualization materials* (images, graphs, bullet points, text) used are clear and not overloaded with information. The material is easily to understand.
- The presentation adheres to the given *time frames*.

Oral Opposition:

- The *oral opposition* is characterized by relevant questions, follow-up questions, and the ability to create context for the audience
- The *oral opposition* encourages discussion rather than detailed scrutiny

Group Criteria (not applicable to individual work):

- The *transition* between different speakers and sections is well-planned and does not result in disruptive interruptions during the presentation
- The *distribution* among different group members is relatively even, both in terms of speaking time and responding to questions

Individual Criteria:

- Each individual speaker in the group establishes and maintains *good eye contact* with the audience while *speaking freely*, with support from memory.
- The *speaker* clearly and comprehensibly explains the material being presented. The discussion of visual material is logical and well-thought-out.
- *The performance is engaging and captivating*
- The individual *responds* in a good way to relevant questions
- The *written opposition* provides a balanced and well-formulated critique of the report in question and evaluates how well the opponents have familiarized themselves with it.

MHK	12-14 criteria met (individual work: 10-12)
HK	5-11 criteria met (individual work: 4-9)
BK (= requires a new presentation)	0-4 criteria met (individual work: 0-3)

Grade Rating Criteria

Grade	Criteria
5	At least 7 x MHK, no BK
4	At least 4 x MHK, no BK
3	No BK
K (Completion to grade 3 can be done)	1-3 BK
U (the work must be redone with a new topic)	≥ 4 BK