



Department of Industrial Economics and Management (INDEK)

ME200X Master Thesis (Degree Project) in Industrial Management, Advanced level, 30 credits

Guidelines for students taking the ME200X course
(from autumn, 2014)

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1. Master Degree project

In these guidelines, you can find all the information you need in order to apply for and write your degree project at INDEK. If you have any further questions, you are welcome to contact Zara Daghbashyan, the course coordinator for the degree project(course project) course at INDEK, at zarad@kth.se. This document, as well as forms and such, may be found on the course home page (see page 1). The following documents are available:

- Guidelines for students writing their master degree project under course code ME200X (these guidelines)
- Application Form for ME200X course
- Guidelines for Assessment Support for fulfillment of degree objectives in the degree project (also in this document)
- Guidelines to seminar series during the course
- Checklist for attendance and submissions during the seminars
- Title page of the degree project

1.1. What is a master degree project?

A master degree project is an independent degree project that is completed to fulfill the requirement for getting your degree and hence, must meet the degree requirements of your program. The purpose of the degree project is to give you an opportunity to demonstrate your ability to perform independent project work, using and developing the skills obtained from the courses in your program.

The degree project consists of an academic paper (and the work behind it) that you will write, present, and receive an evaluation and credits for. A degree project is a scientific work that teachers at INDEK supervise, evaluate and examine. The work you do for a company, as the basis for your degree project, is something for which you take the full personal responsibility. It becomes a matter between you and the company. It is important to have good communication between your supervisor, the contact person at the company, and the informants at the company in order to prevent any problems from occurring. You are responsible for this communication. The quality of the degree project depends on you as a student.

1.2. Master degree project course ME200X

Most of the course consists of completing an independent degree project according to scientific principles, which should result in an academic paper. In order to ensure relevant, interesting and well-founded results, the work should be based on existing knowledge in the field, and develop new knowledge with the help of scientific theories and methods. A good

degree project demands interaction between theory, methods and empirical evidence, which, in turn, requires the student to navigate, literally and figuratively, between the world of the hosting company, and the academic sphere.

In order for the degree project to be completed with a high degree of objective fulfillment and within the given time constraints, proper preparation is essential. Planning the subject area in which the degree project will be conducted is important, and if you choose an area outside the required courses of your program, you will often need to acquire more in-depth knowledge by taking electives. The application always requires you to describe these courses and the in-depth knowledge you possess in relation to your problem formulation.

As part of your study program, you will be given information about the degree project at the very start of the program. In addition, you will be provided with thorough information about the details and practical aspects of the degree project during your reading period prior to the commencement of the ME2001 methods course. As additional support ahead of the 15 December deadline for the submission of your application for a degree project, INDEK arranges a fair in November of every year, at which all subject areas that are associated with the various degree project seminar groups are represented. Here, students can discuss the connection between a subject area and proposed problem formulations, as well as contact potential advisors.

As support for the completion of degree projects at INDEK, designated advisors provide guidance and supervision. In addition, there is a compulsory series of seminars. Both the ongoing discussion of the degree project in private conversations with advisors and discussions and critical analysis of the work of other students during these seminars are important for producing a truly high quality degree project.

1.3. Eligibility for the course

As the degree project is meant to prove that you have independently achieved the objectives of your degree program, you should complete all the courses that are part of the study program(s) to which the degree project belongs, before undertaking your degree project.

In order to begin the degree project at INDEK, you must have:

- Earned at least 40 credits in the subject of industrial economics and management,
- Completed a total of at least 240 credits
- Completed ME2001, the Research Methods course, or its equivalent
- Demonstrated sufficient subject depth in relation to the problem area specified for the master degree project

Moreover, according to KTH rules, in order to start a master degree project course, students admitted to 120 credit master programs should have at least 60 credits completed, 30 out of which should be in the main subject area at advanced level.

In addition, some programs have specific requirements. Check with your program office if you are unsure of these. Before we can register you for the course, we ask your program office to enroll you to the course, which they will not do if their requirements are not met.

Before submitting an application, independent students that are not following any study program at INDEK must prepare an individual study plan for the degree project together with INDEK's Director of Studies. This individual study plan must show that the student has knowledge, skills and capabilities, as well as the ability to make assessments that correspond to the objectives of the TINEM Master's programs or TINEM from 2010, and must include the ME2001 7.5 credit methods course that is required for the degree project.

For a further description of how you actually register and become accepted for the degree project, as well as how to register for the ME200X course, see Appendix 1. For common questions in relation to the application and acceptance to the degree project program (e.g., doing the degree project abroad, or seeking an exemption relating to eligibility) see Appendix 4.

1.4. Course learning outcomes and degree objectives

Like other courses at INDEK, the ME200X course has a number of specific learning objectives connected to the industrial economy subject area. These are described below

After completing the degree project, the student should be able to:

- Identify the needs of, and acquire deeper knowledge in certain areas of Industrial Management through her/his work.
- Demonstrate a deeper understanding of current research and development processes through his/her work.
- Independently, critically and creatively plan, formulate, analyze and generate solutions to complex problems in the area of Industrial Management within a specified time frame
- Discuss, explain and apply current research, scientific theories and methods that are relevant to the degree project on an advanced level.
- Present the results of the degree project orally and in writing, and provide relevant feedback on other students' work through opposition.
- Describe, analyze and propose changes to work, processes and structures within an organization with regard to work environment and possibly to other social aspects. This also applies when students are involved in a research project, or are working with a more individually selected problem.
- Evaluate her/his work and discuss its conclusions and the opportunities and limitations of engineering compared to economically, socially and environmentally sustainable aspects
- Show the ability to make judgments with regard to scientific method and ethical aspects in relation to her/his own study by discussing theory and results.

As previously mentioned, the degree project does not merely represent a course in your study program, but is also an important component of the degree you will receive at the completion of your studies. Consequently, the degree project must also satisfy the degree objectives for the degree(s) to which your degree project is intended to lead. The degree project is extensive, and is conducted independently based on the problem you have formulated. Your personal responsibility to understand and continually ensure that learning objectives and degree objectives are included in your degree project is therefore an essential part of its realization. Consequently, learning objectives and degree objectives should be a central part of the discussions you will be having with your advisor as you proceed with your degree project. Instructions in the form of an evaluation template are included in Appendix 2 of this document. This evaluation template is designed for cover evaluation for both the degree objectives for both Masters and the Master of Science in Engineering (Sw. Civilingenjörsexamen). Following the evaluation templates, you will find the degree objectives for each degree as they are stated in the Higher Education Ordinance.

1.5. Literature

Your independent literature studies constitute a large part of your degree project. You will be able to continually discuss the scientific works and professional literature that you are using with both your advisor and your seminar group. You can also get advice about specific literature for your degree project from your advisor. This may be about a methodological approach or the industry in which you are writing your degree project. The course literature for the ME2001 methods course is directly intended to be used throughout the course of your degree project.

1.6. Examination

The degree project (the academic paper) must be approved by an appointed examiner, which is usually a different person than your advisor. This is done in connection with your final seminar. Normally, the degree project course is graded on a scale of A to F. If you follow a study plan for the Master of Science in engineering from 2006 or earlier, you can also choose to receive a pass/fail grade. This is done on the registration form and cannot be changed after acceptance.

Assessment factors and criteria for grading of the degree project can be found at the end of these instructions (see Appendix 4). This is based on evaluation criteria in three areas: (a) the process, including the presentation, (b) the engineering content, and (c) the scientific content.

The evaluation of your degree project focuses on your work viewed from a learning perspective. The question that is posed is to what extent you have the ability to conduct an independent scientific work. This means, for example, that the company's evaluation of the work you have done or the value of your degree project is not part of the evaluation.

Obviously, if the representatives of the company are satisfied with your work, this is highly beneficial. However, this does not necessarily have any bearing on your scientific ability. In the final analysis, it is the assessment of the examiner that counts. The examiner bases that assessment on the grading criteria contained in the assessment (Appendix 4). Examiners, however, also have the freedom, based on their professional competence, to set the grade they deem appropriate. To quote the regulations, "It is the examiner's assessment and reasoning that count". In some cases, a student may feel that the examiner's assessment is unfair. In such a case, exactly as in the case of any course, you can contact the Director of Studies to discuss the matter. However, as mentioned, as a rule, the assessment of the examiner is what counts.

In addition to the assessment for grading, an assessment is made as to whether the learning objectives for the ME200X course and the degree objectives for the respective degree have been satisfied. The examiner is also responsible for the assessment of whether the learning and degree objectives have been met. In the case of both varieties of objectives, a very high degree of satisfaction of one or more objectives can compensate for less than satisfactory fulfillment of an individual objective. In addition, a joint final review of all the degree projects takes place at the final seminar, at which all examiners and advisors for the seminar group in question participate.

1.6.1. Individual examination

If two students collaborate on a degree project, the duties of the advisor and the examiner also include making a determination that both the students have satisfied the degree objectives, and have made a sufficient contribution. Each student will receive individual grades.

1. A degree project is written by one or two students, never more. Although the Department of Industrial Economics and Management (INDEK) always recommends that the degree project be written jointly by two students, you are also free to write it by yourself. The reason that we recommend that you write it together with another student is that we know from experience that this has its advantages, primarily when it comes to the quality of the work performed and the learning experience derived from the degree project. However, INDEK cannot help you find another student to write with. One suggestion if you haven't found anyone with whom to work, is to ask someone in the seminar group whether there are any other students in the group in the same situation.

Two students from different programs and/or from different divisions of KTH can write their degree project together. But, they must both apply for, and be accepted to, the ME200X course.

1.6.2. Requirements for final grade

In order to receive a final grade for the degree project in the ME200X course, the following requirements must be satisfied:

1. The degree project (the academic paper) must be approved by the examiner in consultation with the advisor.
2. The student must defend his or her own degree project. This defense will be evaluated by the advisor and the examiner, and take place within the framework of the seminar series (see Appendix 3 for the structure of the seminar series, as well as the instruction for seminar series found on the homepage of the degree project).
3. The Student's opposition with regard to the degree project of another student. This opposition will be evaluated by the advisor and the examiner, and take place within the framework of the seminar series (see Appendix 3)
4. Attendance and submissions within the framework of the seminar series (including a final quality assessment conducted by all the examiners and advisors in the seminar group).

Summary of requirements:

- Approved report
- Approved defense of one's own degree project
- Approved opposition to someone else's degree project
- Approved attendance and submissions within the framework of the seminar series (including a joint review)

1.6.3. Avoid plagiarism

The course is based on individual work, with continual submissions, and plagiarism is not permitted. Information regarding plagiarism can be found at www.kth.se/plagiat. Information about what constitutes plagiarism, and how plagiarism is discovered will be provided during the course. Actions taken can include automatic checking of work submitted, as well as requirements for ongoing learning, and changes in material submitted during the course.

1.7. Examiner

An examiner is appointed for every degree project. INDEK has a number of examiners with many years of experience assessing academic papers. An examiner usually performs that function for several degree projects during a semester, which increases the probability of fair assessments. The examiner is also the person who makes the final decision on problem formulation, and plans for individual degree projects will be approved based on the application. An examiner at INDEK can also be an advisor, but not for the same degree project for which he or she serves as examiner.

1.8. Supervisor

The function of an advisor is to provide support and guidance, as well as giving criticism. The main function is to contribute academic guidance and supervision. The advisor carries on a dialog with the examiner, during the course of the work, and consults with the examiner with respect to grading. The advisor for degree projects within the framework of course code ME200X must be a person affiliated with INDEK. An assistant advisor may be selected from a different department, if there is a need to do so, but the responsibility for providing support and advice within the context of a degree project always belongs to the formal advisor.

2. Seminar Groups and subject areas at INDEK

Each master degree project student belongs to a seminar group. The purpose of the seminar group is to provide support and supervision and facilitate cross-degree project learning among students, as well as to provide each student with an opportunity to critically evaluate other students' scientific work, and to act as an opponent.

Currently, there are six different seminar groups that largely represent the various divisions of INDEK. Note that there is often quite a large overlap between different groups so that a degree project can often fit into more than one seminar group.

You can read more about the divisions of INDEK and about the different supervisors on the INDEK home page: <http://www.kth.se/en/itm/inst/INDEK>.

Regarding the conduct and content of the seminar series, see 2.2., below, and the Instructions for INDEK's seminar series for degree projects, located on the website for degree projects (Seepage 1).

2.1. Subject areas for INDEK seminar groups

Entrepreneurship and innovation:

Kristina Nyström (contact), Anders Broström, Gregg Vanourek, Hans Lööf, Per Thulin, Stefan Fölster, and Terrence Brown. This group focuses on degree projects in the areas of entrepreneurship, innovation, technical development, industrial dynamics and economic development. *Examiners: Kristina Nyström and Terrence Brown.*

Finance:

Tomas Sörensson (contact). This group focuses on degree projects in the area of finance. *Examiner: Hans Lööf*

Industrial dynamics, and energy:

Staffan Laestadius (contact), Cali Nuur, David Bauner, Michael Novotny, Niklas Arvidsson, Pranpreya Sriwannawit, Pär Blomkvist, Thomas Sandberg, and Vicky Long. This group focuses on degree projects in the areas of industrial dynamics (technical and industrial change- and innovation processes in several technology areas – not least ICT, the “new” car industry and systems for payments – and geographical areas, such as China) and company networks (“clusters” as well as global businesses, outsourcing, global production and research). Also, degree project with a focus on sustainability-related industrial and technical change processes fits well into this group, as well as R&D, knowledge management and other knowledge-intensive businesses. Many tutors in the group are focused on the area of energy, not least in businesses and projects related to the ongoing transformation of energy systems in a sustainable way. *Examiners: Staffan Laestadius, as well as Niklas Arvidsson, Cali Nuur, and Pär Blomkvist.*

Industrial management:

Pernilla Ulfvengren (contact), Andreas Feldman, Anna Jerbrant, Anna Svarts, Caroline Munthe, Charlotta Linse, Jannis Angelis, Jonatan Freilich, Lars Uppvall, Maria Hammarén, Maria Lindhagen, Mats Engwall, Matti Kaulio, Stefan Tongur, and Thomas Westin. This group focuses on degree projects in the areas of project leadership, production, supply chain management, service management, management control, management of design & creativity, R&D management, and innovation processes within companies. *Examiners: Mats Engwall, Jannis Angelis and Matti Kaulio.*

Marketing:

Esmail Salehi-Sangari (contact), Henrik Blomgren, Henrik Uggla, and Maryam Lashgari. This group focuses on degree projects in the area of industrial marketing, strategic marketing, strategic brand management, and areas that demand specialist knowledge in brand leverage strategy, brand extension, co-branding and ingredient branding, as well as brand portfolio management. *Examiner: Esmail Salehi-Sangari*

Organization and leadership:

Monica Lindgren (contact), Marianne Ekman Rising, Charlotte Holgersson, Sophie Linghag, Johann Packendorff, and Anna Wahl. This group focuses on degree projects in the area of organization and leadership in a broad sense. This includes areas such as organizational development and change, organizational culture, leadership, motivation and work satisfaction, project work and other new forms of organization, international organization and differences in culture, gender and diversity, ethics, knowledge-intensive and professional work, and organizational learning. In addition, degree projects related to project planning, change management, knowledge management, lean manufacturing, management development,

equality work, HRM, and employee-driven innovation fit in this group. *Examiners: Marianne Ekman Rising, Monica Lindgren, Johann Packendorff, and Anna Wahl*

2.2. Work in seminar groups

The seminar groups start each semester. You need to join them when you choose a starting point for your degree project. The seminar groups usually start at the beginning of Period 1 and in the beginning of Period 3 (there are some groups that can admit students on a rolling basis). The seminar groups are led by one or more supervisors. In most cases, the synchronization with the students' hosts (the companies) has worked out well using different arrangements. Starting your work at the company before you begin your first seminar presents no problem, and neither does starting your first seminar some time before you start at the company. In general, it is not possible to start work a long time before the seminar group starts. Some parts, especially methods, demand a lot of work from you during this time. You will probably need to read some suitable literature about methods according to the instructions of your supervisor.

When work starts in the seminar group, follow these parts as if your work is synchronized with the rest of the group. You can plan this before you start to write your degree project. As mentioned, it is also sometimes possible to join a seminar group after it has started, if it is okay with your tutor to do so. Remember that there are often practical reasons to deny this, such as there not being room for yet another degree project in the group, or if the tutor thinks that it will be too difficult for you to manage to keep up with the pace of the group.

It is very important that you know what the degree project will deal with before you apply to a seminar group. It is better to wait for the next group to start than to start without a clear idea of what your degree project will address. You should contact the seminar group, however, as soon as you know that you want to write your degree project in a certain area.

The seminar group meets in a number of seminars according to the following:

Problem, methodology and implementation

The aim of this seminar is to define a problem area, to introduce you to the techniques that are used in a scientific investigation, and to provide you with support during the early stages of your degree project.

Theoretical framework

When you have selected a company and a problem area, the next step is to relate what you find in the company to the area of knowledge and recent research in the area. This means choosing theories and models. It is important that you always justify your choice – demonstrating that the theories are relevant to what you study, and that the models that you select are chosen because they are deemed to work in the study in question.

Empirical research

At this seminar, we discuss different ways to collect, process and present data. The empirical data is analyzed and evaluated against the theoretical framework, and conclusions are drawn.

Presentation and opposition

Each student must present and defend her/his work and oppose someone else's work. This is done at a final seminar. We also practice how to defend and constructively oppose a degree project, and apply these skills to your own work and that of others. The best written reports are most often ones that the student started to write at an early stage of the process.

The seminar leader may decide to hold an addition seminar meeting for any of the seminar groups, if so needed.

APPENDIX 1: Application, admission, registration and allocation of supervisors and seminar group and reporting of results

The first step of your degree project is for you to choose a **company** and a **problem area** in your subject area. The problem and its definition are very important to the success of the degree project. Here it is important to find a problem that is both meaningful to study, and is so well defined that it requires real expertise to resolve. You will also be choosing appropriate methods to solve the problem. Even at this early, keep in mind that the printed degree project is always a public document: If the company wishes to remain anonymous, or if certain parts of the work need to be anonymized, you must take this into account when designing your study.

So what happens if you do not know what to write about?

Basically, there is no solution to this, other than that you, independently, define what your degree project will deal with. This aspect – that you have learned enough in your fields to be able to find a suitable problem to confront – is an important part of the assessment. There may be reason, however, during the planning of your degree project to discuss the formulation of your problem with some other researcher in the area. What you then can do is to contact one of the advisors who are available in one of the areas you are thinking about and have a discussion with him or her.

In November, INDEK arranges an annual degree project fair. The purpose of this fair is to enhance the initial phase of students' practical planning of the degree project, and provide an opportunity for a more in-depth orientation with respect to the various subject areas. Informal discussions and guidance can be provided here by potential advisors. Examiners and advisors from every subject area participate in the fair.

If, despite your planning, participation in the degree project fair and discussions with potential advisors, you still have difficulties formulating a problem for your degree project in time for the registration, contact the course coordinator for the ME200X course, as soon as possible.

The ideas about degree projects received by INDEK from businesses, organizations and research projects are published on the website for the course (as news). There is also a national degree project proposal bank (see <http://www.xjobb.nu/>).

Application

Your application for the ME200X master degree project course should be emailed no later than

- December 15 if you are applying for the spring semester
- August 15 if you are applying for the autumn semester.

The application form can be found at:

<http://www.kth.se/en/itm/inst/INDEK/utbildning/examensarbeten>

Fill out the application form and email it to us at examensarbete@INDEK.kth.se. It will then be passed through a chain of recipients. On the top of the form, select the course code, your preferred seminar group (see your alternatives in this syllabus), and the supervisor you have contacted, if any. If you are interested in any of the available seminar groups and have already contacted a company that wants you to conduct a study for them, you can mention a possible tutor. S/he can help you to formulate a problem. In some cases, a supervisor can also help you formulate some points of departure for your degree project.

In the next field, fill in your civic registration number (Sw. *personnummer*), your name and your email address. If you are two students who will be working on the degree project together, the other student has to fill in the corresponding information on the next line. In the next field, fill in the information that you have about the company (if applicable): Company name, contact person and his or here mail address, and a preliminary title for the degree project report. Information that you do not have yet naturally doesn't have to be included on the form. The title is a guide for us when judging what type of degree project you will be writing, so that the choice of seminar group and tutor will be as good a fit as possible. In the last field, fill in the date of application, and what semester for which you are applying.

After this, make the case for your degree project in three fields:

- First, explain why you are qualified to write a degree project in the area you are applying to. For example, if you are writing your degree project in the area of marketing, indicate the courses you have taken and/or any other knowledge or experiences of marketing.
- Second make the case for your choice of company: Is it in line with your education. In other words, can you substantiate your knowledge in your engineering area through a study on or for this company? Or explain what makes this company an interesting object of study for you.
- Third, state the contribution to the area of knowledge your work is intended to make. In what way will the work you propose increase available knowledge?

Finally, write something about the work that relates to the degree project. If you do not know that much yet, this section could consist of 3-4 lines of text; if you know more, it could be up

to two pages of text (never more than two pages). This text is mainly to give the tutor and examiner an idea of what you will write about, so that s/he can evaluate whether the degree project fits with the seminar group.

What happens next?

Within a week, after the application has been checked and any exemption granted (see below), you can expect to receive an e-mail that will inform you whether you can be registered for the course. If you have been admitted, you will also be informed about the seminar group you are being assigned to and the tutor you will have. If something is unclear during the process, such as not having the all of the requirements for eligibility to write your degree project at INDEK, you will get a message about this by email.

Check that you have been registered for the degree project course (this course should appear as active on “My pages”). The registration process is usually finalized one week after the course has started. After the application, the process is often the following: Talk to your office, and make sure that it is you will be permitted to write your degree project at INDEK. At the end of the registration process we will contact your office and check whether everything is okay from their side, so it is important that you contact them.

Application for exemption

If you don't meet all the course prerequisites you must also complete and submit an application for an exemption. You send this in together with your application to write your degree project at INDEK. The application for exemption can be found at the course link (see page 1). You have to fill in all the information on the required form. Observe that the two documents will be dealt with separately. Also, remember to state the reasons why your application for an exemption should be accepted.

At INDEK, and ITM, the school that INDEK is a part of, the policy is to grant exemptions from the requirements only in exceptional cases. Our advice to you is, therefore, to complete your course requirements as soon as possible.

Reporting and questions about the National Board of Student Aid (CSN)

If you need to have some of your credits reported because of the deadlines at the National Board of Student Aid (CSN), it is possible to get 25, 50 or 75% of the credits confirmed once you have reached a certain point in your work. In this case, contact your supervisor, who is the only one with the authority to sign such a certificate, in conjunction with the examiner.

Once you have passed the course, you must do the following to get the credits reported in the student registry (LADOK): Please note that you must be registered for the semester for which the results will be reported. When designing the final version of your degree project, ask your tutor to get a serial number that uniquely identifies your degree project. In doing so, you may also (if you wish) give your permission for your degree project to be published online. Each master degree project student is always required to publish her/his degree project in the

KTHB database, DiVA. The full text, however, does not need to be published online, but only information about it is <http://www.kth.se/en/kthb/publicering/admin/registrera-examensarbeten>.

The Department needs to have both a Swedish and an English title of the work, or just an English title (which is needed to get the credits reported). The first page should be designed according to the template available on the web page. This form must be followed. You can design the rest of the work more freely, however. Thus, although it is not possible to have a first page that departs from the template, you can design your second page any way you wish. Remember to make sure that the text is centered on the first page.

The final version of the report should be submitted in PDF format to your supervisor, who will then send it for registration.

APPENDIX 2: Assessment Support for the fulfillment of course requirements and degree objectives by the degree project

The purpose of this assessment support is to ensure a rectified and thorough assessment of individual degree projects with respect to the achievement of objectives of the Master in Industrial Management and the MSc in engineering degrees.

The student and the supervisor should, therefore, always initially make it clear whether the degree project will lead to an MSc in Engineering and if so, in which area of technology. Nearly all degree projects in the ME200X can lead to both a Master in the main field of Industrial Management, and to an MSc in engineering, either immediately or later, if the student requests it and has sufficient credits in designated courses.

Assessment support is used throughout the degree project process – not just at the final assessment. It should continuously be included as a basis for reconciliation between the student, the supervisor, and the examiner; and is also used in INDEK's seminar series so that the different objectives can be discussed in connection with various steps in the process.

The assessment template is designed to cover the objectives of both degrees (Master in Industrial Management and MSc in Engineering) without having to use two sets of partially overlapping targets.

Final grading of the degree project is done with the formal assessment criteria that are used for all degree projects at KTH. Assessment support is, therefore, in itself not a basis for grading, but all eleven points below have to be met (with ☺ or ☺) for the degree project to be approved.

1. Demonstrates advanced knowledge in industrial management, including advanced insights into current research and development

☺ Advanced knowledge in current research and development work within the field of industrial management is demonstrated. The work utilizes knowledge from studies on an advanced (master) level in industrial management. An extensive review of existing literature, as well as a reflection on how the work is linked to the field of industrial management, is presented. This adds in a clear way to new knowledge in industrial management. The work demonstrates the ability to make an independent contribution to the field.

☹ Advanced knowledge in current research and development work in the field of industrial management is demonstrated. The work utilizes knowledge from studies on an advanced (master) level in industrial management. An extensive review of existing literature, as well as a reflection on how the work is linked to the field of industrial management, is included.

☹ The link to industrial management is weak or missing in the degree project. Knowledge from studies on an advanced (master) level within industrial management is not utilized. The literature summary and the reflections on how the work is linked to the field of industrial management have their weaknesses.

2. Shows substantive methodological knowledge in industrial management

☺ Potentially relevant theories, methods and concepts in engineering and science have been identified. A well-justified choice of theory and method has been made. Selected theories and methods have been applied in a correct and innovative way. The work demonstrates a deep and broad knowledge when it comes to methodology.

☹ Potentially relevant theories and methods in engineering and science have been identified. A well-reasoned and appropriate selection of both theories and methods has been made. The methods selected have been applied correctly.

☹ The selected theories and methods are not sufficiently relevant to the work. The student has not demonstrated sufficient proficiency with regard to the selected theories and methods.

3. Shows ability to contribute to research and development, thus contributing to the development of knowledge

☺ The contribution to research and development and how this contributes to the development of knowledge is adequate and reported in a relevant way. It is clear whether the contribution is theoretical, methodological, analytical and/or empirical.

☹ The work cannot be sufficiently linked to research or development.

4. Shows ability to identify, formulate and deal with complex issues holistically, critically, independently and creatively, and to evaluate this work

☺ The report presents a clear and well-defined research question, objective and aim. The research question, the objective and the aim have been processed adequately, creatively, critically and reflectively. There is a clear link between the research question, the objective, the results, the discussion and the conclusions. The report's conclusions are well-founded and correct. The work has been evaluated and this has been included in the report.

☺ The report has a clear, distinct and relevant research question. The question has been processed adequately and contains some originality. There is a clear link between the question, the findings and the conclusions. The report's conclusions are well-founded and correct. The work has been evaluated, and this has been included in the report.

☹ The research question is unclear or missing. Relevant methods are not used. The report does not include an answer to the question raised. The conclusions are incorrect.

5. Shows ability to plan and carry out advanced tasks within specified limits

☺ A realistic work plan has been formulated. The deadlines that have been communicated and established have been respected during the implementation of the work, and are also described in the report. The adjustments that have been necessary for the implementation have been documented regularly and clearly communicated to the supervisor.

☹ The work has not followed the established deadlines, nor have relevant factors for deviations been reported.

6. Shows ability to create, analyze and critically evaluate different technical solutions

☺ The report addresses new solutions that have been analyzed and evaluated critically and systematically. Alternative solutions have been produced and processed meaningfully and comprehensively.

☺ The report suggests solutions that have been analyzed and evaluated critically and systematically.

☹ The work has not suggested solutions, nor has it analyzed and evaluated these critically and systematically.

7. Shows ability to critically and systematically integrate knowledge

☺ The work and the report integrate knowledge and methods from multiple fields in an innovative, clear, systematic and critical way.

☺ Relevant knowledge and methods have been integrated, applied and reported.

☹ Areas of relevance to the work are not reported or not used. The selected and acquired knowledge is not reported clearly and lacks justification.

8. Shows ability to clearly present and discuss conclusions in speech and writing, together with the knowledge and arguments that underpin these.

☺ The report is very well written. Overall, the structure and layout are of very high quality. The work has also been presented verbally in an adequate and pedagogical way.

☺ The report covers the selected area with relevant and correct language. Overall, the structure and layout are of good quality. The work has also been presented verbally in an adequate and pedagogical way.

☹ The report lacks adequate language processing, which means that the work cannot be easily understood or assessed, based on the report. The oral presentation of the work was inadequate.

9. Shows ability within the context of the specific degree project to identify the aspects that must be answered in order for sustainable development to be considered

☺ The degree project reports and explains the chosen methods and discusses results from a perspective that focuses on sustainable development.

☹ The degree project does not consider this aspect, even though the examiner deemed it to be relevant to the degree project.

10. Shows ability to make judgments with respect to the relevant scientific, social and ethical aspects and awareness of ethical aspects of research and development

☺ The report presents a scientific approach and accounts for relevant social and ethical assessments, and accounts for the possible ethical implications of the work performed.

☹ Scientific, social and ethical issues are not considered, even though the examiner deemed them to be relevant to the degree project.

11. Demonstrates the knowledge and ability required to work independently as a Master in Industrial Management and as an MSc in Engineering, and to participate in research by having implemented the degree project

☺ The degree project was independently realized without extraordinary support measures or adjustments needed. No extra additional resources have been needed for fulfillment of the work.

☺ The student carried out the work with reasonable support.

☹ The student required an unreasonable amount of support. The need for these support measures have rendered it likely that the student isn't able to work independently after graduation.

Degree objectives for the Master of Science in Engineering (Civilingenjörsexamen)

Scope

A degree of Master of Science in Engineering is obtained after the student has completed course requirements of 300 higher education credits.

Objectives

For a degree of Master of Science in Engineering, students must demonstrate the knowledge and skills required for them to work independently as a graduate engineer.

Knowledge and understanding

For a degree of Master of Science in Engineering students must

- demonstrate knowledge of the scientific basis and proven experience of their chosen area of engineering, together with insight into current research and development work; and
- demonstrate both broad knowledge in their chosen area of engineering, including knowledge of mathematics and natural sciences, and substantially deeper knowledge in certain parts of the field.

Skills and abilities

For a degree of Master of Science in Engineering students must

- demonstrate an ability, from a holistic perspective, to critically, independently and creatively identify, formulate and deal with complex issues, and to participate in research and development work so as to contribute to the development of knowledge;
- demonstrate an ability to create, analyse and critically evaluate different technical solutions;
- demonstrate an ability to plan and, using appropriate methods, carry out advanced tasks within specified parameters;
- demonstrate an ability to integrate knowledge critically and systematically and to model, simulate, predict and evaluate events even on the basis of limited information;
- demonstrate an ability to develop and design products, processes and systems taking into account people's situations and needs and society's objectives for economically, socially and ecologically sustainable development;
- demonstrate an ability to engage in teamwork and cooperation in groups of varying composition; and
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups, orally and in writing, in national and international contexts.

Judgement and approach

For a degree of Master of Science in Engineering students must

- demonstrate an ability to make assessments, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work;
- demonstrate insight into the potential and limitations of technology, its role in society and people's responsibility for its use, including social and economic aspects, as well as environmental and work environment aspects; and
- demonstrate an ability to identify their need of further knowledge and to continuously upgrade their capabilities.

Independent project (degree project)

For a degree of Master of Science in Engineering students must have completed an independent project (degree project) worth at least 30 higher education credits, within the framework of the course requirements.

Other

For a degree of Master of Science in Engineering more precise requirements are also to apply, as determined by each higher education institution itself within the framework of the requirements in this qualification description.

Degree objectives for the Master's degree (Masterexamen)

Scope

A Degree of Master (Two Years) is obtained after the student has completed course requirements of 120 higher education credits with a certain area of specialisation determined by each higher education institution itself, including at least 60 higher education credits with in-depth studies in the main field of study. In addition, the student must hold a Degree of Bachelor, a Degree of Bachelor of Arts in , a professional degree worth at least 180 higher education credits or an equivalent foreign qualification.

Exceptions may be made to the requirement of a previous qualification for a student who has been admitted to the educational programme without having had basic eligibility in the form of a qualification. However, this does not apply if in the admissions process an exception has been made under Chapter 7, Section 28, second paragraph on the grounds that there has been insufficient time to issue a qualification certificate.

Objectives

Knowledge and understanding

For a Degree of Master (Two Years) students must

- demonstrate knowledge and understanding in their main field of study, including both broad knowledge in the field and substantially deeper knowledge of certain parts of the field, together with deeper insight into current research and development work; and
- demonstrate deeper methodological knowledge in their main field of study.

Skills and abilities

For a Degree of Master (Two Years) students must

- demonstrate an ability to critically and systematically integrate knowledge and to analyse, assess and deal with complex phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan and, using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge and to evaluate this work;
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups, orally and in writing, in national and international contexts; and
- demonstrate the skill required to participate in research and development work or to work independently in other advanced contexts.

Judgement and approach

For a Degree of Master (Two Years) students must

- demonstrate an ability to make assessments in their main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work;
- demonstrate insight into the potential and limitations of science, its role in society and people's responsibility for how it is used; and
- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

Independent project (degree project)

For a Degree of Master (Two Years) students must have completed an independent project (degree project) worth at least 30 higher education credits in their main field of study, within the framework of the course requirements. The independent project may comprise less than 30 higher education credits, but not less than 15 higher education credits, if the student has already completed an independent project at the second level worth at least 15 higher education credits in their main field of study, or an equivalent project in a foreign educational programme.

Other

For a Degree of Master (Two Years) with a certain area of specialisation more precise requirements are also to apply, as determined by each higher education institution itself within the framework of the requirements in this qualification description.

APPENDIX 3 : Assessment criteria for grading

For each rating, the student is required to satisfy the following criteria:

Assessment bases	Process	Engineering and scientific content	Presentation
Excellent	<ul style="list-style-type: none"> Independently plan and execute work within agreed timeframes, show good initiative and be open to coaching and criticism. Independently identify their own needs for new knowledge and to obtain these skills. Show the ability to familiarize themselves with a new work and formulate relevant and constructive criticism. 	<ul style="list-style-type: none"> Based on the research problem and methodology, show very good ability to systematically apply engineering and scientific skills, such as problem definition, modeling, analysis, development and evaluation. Where relevant to the task, demonstrate an awareness of social and ethical aspects, including economically, socially and ecologically sustainable development. 	<ul style="list-style-type: none"> Create a well-structured report, with an explicit statement of a work and results, clear analysis, and well-reasoned argumentation, good language processing, correct structure, and scientific accuracy. Show the ability to orally present with clear reasoning and analysis, and the ability to discuss the work.
Good	<ul style="list-style-type: none"> Plan and execute work within agreed deadlines, show initiative, ability and be open to coaching and criticism. Demonstrate the ability to obtain new knowledge. Demonstrate the ability to familiarize themselves with a new work and formulate Relevant criticism. 	<ul style="list-style-type: none"> Based on the research problem and methodology, demonstrate the ability to systematically apply engineering and scientific skills, such as problem definition, modeling, analysis, development and evaluation. Where relevant to the task, demonstrate an awareness of social and ethical aspects, including economically, socially and ecologically sustainable development. 	<ul style="list-style-type: none"> Create a well-structured report, with an explicit statement of work and results, analysis and argumentation, as well as good language processing, correct structure, and scientific accuracy. Show the ability to orally present and discuss the work.
Sufficient	<ul style="list-style-type: none"> Implement the work within the agreed time frames, show some initiative and be open to coaching and criticism. Show some ability to acquire new skills. Some ability to familiarize themselves with a new work and formulate criticism. 	<ul style="list-style-type: none"> Based on the research problem and methodology, show some ability to apply engineering and scientific skills, such as modeling, analysis, development and evaluation. Where relevant to the task, show some awareness of social and ethical aspects, including economically, socially and ecologically sustainable development. 	<ul style="list-style-type: none"> Create a written report with an acceptable structure and language processing. Demonstrate the ability to orally present work.
Fail	Lack of respect for agreements, significant dependence, or disobedience with regard to instructions. The inability or unwillingness to acquire new skills.	Major deficiencies in engineering or scientific skills, and significant remaining gaps in methodology, despite requests,	Remaining gaps in the written report despite requests, or substantial inability to orally present and discuss work.

To be approved, a degree project must pass all three assessment criteria listed above (process, content, presentation).

APPENDIX 4 : FAQ

I want to write my degree project abroad. How do I do this?

Generally, so much learning is lost when the degree project is written abroad. Most of all, the direct contact with a seminar group is lost, which means that the academic dialogue is not used in the intended way. At the same time, there are advantages of writing abroad – it could mean experiences that can be difficult to obtain in other ways. Therefore, we try to find solutions for this when possible.

A starting point is that you should have established a contact with your tutor at INDEK well before you leave Sweden, so that you can solve all practical matters about your work before you leave. If you visit Sweden, you should meet with your tutor at INDEK to discuss the degree project. In general, you and your tutor need to discuss and agree on how you should design the work process. Often, it is as follows:

The tutor at INDEK demands that s/he and you have good contact throughout the work, and that you report what you do, step by step, on a regular basis. Often, the tutor demands from you that you should participate in some type of substitute for seminar group work abroad. This could involve, for example, exchanging reports with another student who is also writing her/his degree project abroad, or to participate in a seminar group abroad.

I don't meet one of the prerequisites to begin my degree project. Can I apply for an exemption?

At INDEK, and at ITM, the school to which INDEK belongs, the policy is to grant exemptions from prerequisites only in exceptional cases. But it is nevertheless possible to apply for an exemption. As previously mentioned, you attach your application for an exemption at the same time as you apply to do your degree project at INDEK. There are cases in which an exemption is never granted, for example if you lack a course that is crucial to your degree project. This applies as well if you lack the introductory course in industrial economics. The basic rule is that the compulsory courses must be completed. In the case of the I-program (CINEK/TIEMM), for example, the first courses of the study program (introductory course or equivalent) and the final (primary, the TEL courses) play a very central role. For the Master's program in industrial management (TINEM), the corresponding rules apply to the initial courses (introductory course and perspective course) as well as the final courses (especially ME2502, CPIM). The best advice is therefore to do what is required to take the exam for the course, as soon as possible, and then register for the degree project course.

All students who wish to do their degree project at INDEK must have completed the ME2001 course, Research Methods in Industrial Economics, 7.5 credits. This course consists of seminars and lectures, and is given twice each academic year, in Period 1 and Period 2. You should preferably take this course the term before you begin with the degree project.

I will not be able to devote this degree of intensive work to my degree project. Does this mean I can use one year for my degree project instead of one semester?

The answer is no. The course is provided during the weeks of the autumn semester, or during the weeks of the spring semester, and so on. The rest is up to a discussion between you and your tutor. That said, special solutions can always be approved by the tutor. This rule means that you can't expect to get more time just because you have started your degree project later than other students (e.g. in October instead of when the autumn semester starts). You are expected to start your degree project according to the schedule. If your work takes more time than one semester, this will influence your grade.

I would like to write my degree project during the summer. Is that OK?

No, in normal cases there is no supervisory capacity and no seminar groups in the summer months.

I am disabled. What additional support can I get from the supervisor to handle my degree project?

The general rule is that the disability (such as ADHD, Asperger's syndrome, asthma, allergies, dyslexia, deafness, hearing loss, narcolepsy, mental disability, physical disability, visual impairment and whiplash) should not prevent a student from participating in this course. Many practical obstacles can be removed in consultation between the supervisor, the student and fellow students. This may include an agreement to refrain from using perfumes at the seminar sessions, if any of the participants suffers from an allergy, to locate meetings in rooms that are possible to reach even if any of the participants uses a wheelchair, etc. In cases where this does not demand significant additional resources, the solutions are arranged within the framework of the course planning. If the requested action is such that additional resources are needed, this requires a dialogue between the student, the supervisor and the Director of Studies, at the initiative of the coordinator for students with disabilities who can be reached at funka@kth.se

I need a certificate of registration, for example, to prove to the CSN that my degree project will extend over the summer. What can I do?

There are several ways to accomplish this:

1. If the work is actually taking more time, and your tutor approves this, we can re-register you for the next semester. In that way, you will have a registration that is also valid for the next semester.

2. You can get a certificate stating that you, for a given reason, will also take the course in a later semester. This can be produced by the INDEK administration from LADOK.

3. Sometimes CSN sends out a form, that you can take to KTH for the examiner to sign.

Of course, three solutions require you to have a valid reason for why your studies are not following the semester schedule.

I have applied for the degree project course at INDEK. But my assignment has taken another direction, and it would therefore be more appropriate to write my degree project at another part of KTH instead. Is this possible?

Yes. But you first need to contact your new tutor and check that it's okay. If it is okay, let your present tutor know this and send an email to zarad@kth.se with a copy to both your current and your new tutor. When everything has been checked, INDEK will register this as a late termination of the course. You will receive a message about this, after which you can request the other part of INDEK to register you for their course.

Common problems with degree project writing

Why walk into the same traps as earlier students? The following are some common problems that many encounter when they write their degree projects:

- Text in your degree project about theory, literature, scientific approach, methods often is not aligned to the study, as such, and/or doesn't lead to anything that is clearly used in the degree project. Eliminate text that doesn't contribute anything to the degree project. Follow the framework for the degree project, and focus on what is needed in order to reach to the objective of the study.
- The text about the empirical investigation is often only an account of the answers that have been given in the interviews, for example, and does not possess a clear connection to the theory, literature, and research questions. Discuss this text in connection with the theory, your research questions, and so on. Make sure that you write in a way that makes the text follow the degree project that you advocate.
- Sometimes parts of the text don't match up with each other, because the student has divided the work too rigidly. If, for example, you are first working with theory, then with methods, and only then, with the empirical investigation, the different parts won't fit each other. The theory isn't adapted to the empirical findings, and so on. Work with all the parts at the same time, and let them cross-fertilize each other, instead.
- Many students falsely believe that scientific text always should be neutral and describe some kind of reality, and that they then are in some way "objective". But in the academy, to argue and advocate a degree project doesn't mean that one should not put forward one's own personal opinions. Instead, it means that

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you should, honestly and openly, argue for the correctness of one's conclusions with scientifically proven results.