



KTH Computer Science
and Communication

Kerstin Frenckner, ph. +46 – 8 – 790 9754, e-mail kfrenck@csc.kth.se
Copyright CSC

February 11, 2011

DEGREE PROJECT AT CSC, KTH

This text is valid for students doing degree projects, "exjobb", of 30 ECTS credits examined by CSC. For each subject there is additional information that tells e.g. the name of the coordinator and time schedule for presentations and how to sign up for a presentation. Such information is found on the CSC web site.

1 Before you start.....	1	2.2 Group supervision.....	8
1.1 General.....	1	2.3 Documentation of the work process.....	8
1.2 Information on exjobs.....	2	2.4 Methodology course.....	8
1.3 The purpose of the exjobb.....	2	2.5 Specification with time schedule.....	8
1.4 What is an exjobb?.....	2	2.6 Reading part.....	9
1.5 When can you start.....	3	2.7 The role of your CSC supervisor.....	9
1.6 Prerequisites.....	3	2.8 Attending a CSC research seminar.....	10
1.7 How to find a suitable project.....	3	2.9 Attending exjobb presentations.....	10
1.8 Individual work.....	3	2.10 Opposition.....	10
1.9 Before starting the work.....	3	2.11 The report.....	11
1.10 Grading.....	4	2.12 How to write references in the report.....	13
1.11 The supervisor and the examiner.....	4	3 Finishing up.....	13
1.12 Group supervision.....	4	3.1 Check of language, typography and formalities ..	13
1.13 The exjobb contract.....	5	3.2 Approval of the report.....	13
1.14 Research oriented work.....	5	3.3 Oral presentation.....	14
1.15 References.....	5	3.4 After the presentation.....	14
1.16 Plagiarism.....	6	4 Requirements.....	15
1.17 If you do not finish your project.....	6	5 Suggested literature.....	15
1.18 Insurance.....	6	Appendix A: Evaluation criteria.....	16
1.19 Payment.....	6	Appendix B: CSC guidelines for assessment of degree projects.....	17
1.20 Reporting in Ladok.....	6		
2 During the work.....	7		
2.1 How to get about it.....	7		

1 BEFORE YOU START

1.1 General

The purpose of these pages is to tell non-Swedish students how a degree project at CSC is conducted. The word "exjobb" is used for degree project.

An exjobb is formally always examined by a department at KTH, in this case CSC. The student has a supervisor and an examiner at

CSC. Some projects are performed at a company/institute outside of KTH.

An exjobb is always made within a specific subject. There are several subjects at CSC, e.g. computer science, media technology and scientific computing,

For the different subjects, slightly different rules apply. Exjobs in different subjects are coordinated by different persons.

The names of the coordinators are found on the CSC student web site.

There are also some rules common to all exjobs at KTH, found at

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27212?l=en_UK

Before you start working on your exjobb, you must have a supervisor at CSC and you must have registered your work with the coordinator for exjobs in your subject at CSC.

1.2 Information on exjobs

Web pages at

http://www.kth.se/csc/student/exjobb-csc?l=en_UK

contain information about exjobs such as hints as to where to find a project and

schedules for the oral presentations. Most of the pages have an English translations.

We must be able to reach you. Therefore we take it for granted that you read e-mail at your CSC/KTH-address (or forward it to an address that you use).

1.3 The purpose of the exjobb

The exjobb is part of your education—the crowning glory of it. In doing the exjobb you use the knowledge and maturity that you have acquired during your long and tedious studies.

Common goals for all degree projects (30 credits) at KTH is that the student should

- be able to apply relevant knowledge and abilities, within the main field of study, to a given problem
- within given constraints, even with limited information, independently analyze and discuss complex inquiries/problems and

handle larger problems on the advanced level within the main field of study

- reflect on, evaluate and critically review one's own and others' scientific results
- be able to document and present one's own work with strict requirements on structure, format, and language usage
- be able to identify one's need for further knowledge and continuously develop one's own knowledge

The exjobb gives 30 credits (30 ECTS credits) which corresponds to five months of full time work.

1.4 What is an exjobb?

The exjobb is the report that treats an interesting problem within the subject area and the process behind the report.

The exjobb must treat a problem within the subject of the exjobb. Focus should be on investigation and analysis of the problem. If programming is involved, it may only be a minor part. The work should be done and

documented in a research oriented way. The problem must thus be clearly defined and delimited so that it can come to an end in five months.

It is up to the supervisor and examiner at CSC to decide whether the problem is suitable for an exjobb.

1.5 When can you start

In the subjects computer science and human-computer interaction group supervision with fixed starting dates is used for most students. But also in these subjects students who do not

speak Swedish usually have individual supervision.

When individual supervision is used it is possible to start an exjobb at any time of the year except for periods of vacation.

1.6 Prerequisites

Normally the student performs the exjobb within his/her field of specialization.

The student must have a good competence in the area of the problem for the exjobb. You must have taken courses that give you competence for doing a good job on the project.

Students on the 300 credit master of science in engineering (civilingenjör) programs must have concluded 240 credits. Students on the 120 credit master programs must have concluded 60 credits of which at least 10 credits within the chosen profile.

1.7 How to find a suitable project

It is up to the student to find a suitable project.

Projects may be found at CSC and the competence centers affiliated with CSC. You may look at the web (links from the exjobb page) and talk to the researchers at the lab where you would be interested in doing your exjobb.

Projects suitable for an exjobb may also be found at companies. (Not only big companies such as Ericsson and TeliaSonera, but also small companies, provide projects suitable for an exjobb.) Experience has shown that this is

generally easier for Swedish students to find one, but if you are interested you should try it. Some companies present lists with suggestions for projects. From the exjobb web page there are links to such pages. "Exjobbspoolen" may also be reached from the exjobb web page. You can also contact a company and ask if they have a suitable project; company presentations at KTH etc. may also be exploited.

If you find the problem for your exjobb outside of KTH, you must make it clear that the report you write is public.

1.8 Individual work

An exjobb is an independent work resulting in an individual report.

Two students may work on two problems that are closely related, but they must each write an individual report.

Exceptionally students may apply for writing a report with two authors. In this case they write a description of the problem and a thorough motivation why it is not possible to

write individual reports and send it to the examiner. Even if the examiner allows a report with two authors the contributions of each individual must be clearly stated. You must bring the permission of the examiner with you when registering the exjobb (e.g. a print-out of an e-mail).

1.9 Before starting the work

The exjobb is examined by CSC, so CSC has to approve of the project. As soon as you have found a project, you must contact the exjobb coordinator for your subject who helps you find a supervisor at CSC. At this stage you should have a short written description of the project.

The description of the project must include: preliminary title, a background, a description of the problem, and a suggestion for how to attack the problem. About one page is sufficient.

The supervisor judges whether the project is suitable for an exjobb and whether you have

the prerequisites necessary for doing the project.

You should also get an approval of the project from the examiner.

When this is done, you contact the administrator to have the exjobb registered. This is done at a personal visit where you should bring a print-out of the description of the project and a print-out of your study merits.

You will get a colored sheet where you collect signatures as different parts of the requirements are fulfilled. Don't lose it, since some of the registrations are done only on that sheet.

1.10 Grading

Exjobs are graded on the goal-related scale A-F. Please note that all grades are used.

KTH has decided that grading is done based on

- 1 Work process
- 2 Engineering-related and scientific content
- 3 Presentation

KTH has decided what has to be achieved in these three respects to reach the different levels 0 (failed) – 3 (excellent). These principles are found at

http://intra.kth.se/polopoly_fs/1.60565!Evaluation_criteria_for_degree_project.pdf

The CSC school has decided on more precise rules based on the KTH rules. A weighting system is used:

What is judged	Weight
Contents of report	3
Work process	1,5
Opposition	0,5
Written presentatin	1
Oral presentation	1

The examiner may choose to add or subtract 1 to the weighted judgement for the report .To get the final grade the five weighted numbers are added.

1.11 The supervisor and the examiner

All students have a supervisor at CCS.

It is the supervisor and the examiner at CSC who decide whether your project is suitable as an exjobb and also whether the work and the report have a high enough quality to pass. The supervisor should give you support but also critique. The examiner examines a fairly large number of exjobs

and cares for the overall quality of the exjobb.

If you find a project outside of KTH you will also have an external supervisor, whose task is to give you more detailed support and especially support on the systems etc. that are used.

1.12 Group supervision

Group supervision is used for exjobs in computer science and human-computer

interaction. A number of students who start their exjobb at about the same time form a group and get a group supervisor.

The idea behind group supervision is that the students should get critique not only from the supervisor but also from other persons and also that the students should learn to criticize the work of others. Critique is here used in its sense of feed-back.

Another idea behind group supervision is to help the students keep up to the time schedule.

The students in the group present their projects to each other, then they read and discuss the specifications and the report along the work.

It may be difficult to include students who do not understand Swedish in a group.

1.13 The exjobb contract

Before you start the actual work on the exjobb, you should have the exjobb contract signed by you, the provider of the project and your supervisor at CSC. The contract formulates

the responsibilities of the parties. It also makes clear that the report is public. There is an English version.

1.14 Research oriented work

Research may be defined in many ways, this is one: “finding new facts using a methodology that assures the correctness of the results”. The borders between investigation, development, and research are somewhat fuzzy. The following demands must be fulfilled in your work:

- Statements that are not evident should be proven. This may be done by logical reasoning or by referencing to a source.
- When you use facts that you have found elsewhere you must give a reference to the source. This must also be done when you summarize someone’s work or ideas.
- Try to relate what you have done to the literature and to knowledge that has been presented in research literature.
- You must clearly distinguish between your results and results that other persons have achieved.

- You must clearly distinguish between facts and interpretations of facts.
- You must clearly distinguish what you have done and what has been done by other people (e.g. before you started your work).
- In the report you must describe not only the results that you got, but also how you went about to get them. Present the methods and the results separately and separated from the discussion.

There are ethical rules and guidelines for research e.g.:

<http://www.niehs.nih.gov/research/resources/bioethics/whatis.cfm>

http://www.ahc.umn.edu/img/assets/26104/Research_Ethics.pdf

1.15 References

Your work should rely on a solid state of the art base. Before starting your work, you must find out what others have done in the field. A good point to start is the web page of KTH Library. You can also search in a number of databases through facilities at the KTH

Library. More information on the library web page: <http://www.lib.kth.se/main/eng/>

Ask your supervisor for hints on where to search for literature.

Your report must include a literature list with all the literature you refer to in your report. You must refer to scientific reports/articles in scientific journals and not only handbooks, company reports and course literature.

Use only sources with high fidelity.

All sources of information that you use in your work must be stated in your report and included in the literature list.

1.16 Plagiarism

Sometimes it is a good idea to make a short citation of what others have said or written. In this case you should use quote the cited text and give a reference. If your task is so close to someone else's that you have an introductory chapter in common, you must both clearly state that this is the case and give each other credit.

http://www.kth.se/csc/student/hederskodex/inledning?l=en_UK

is valid for the exjobb as well as for all other courses.

Not only copying but also simple reformulations and translations are considered plagiarism.

You must also give a reference to the source for all facts and all ideas that are not your own.

The rest of the text must be written and formulated by yourself.

The code of honor

CSC checks the reports for plagiarism.

1.17 If you do not finish your project

If, for some reason, you do not finish your project, you must tell the exjobb coordinator so. Projects that are not finished within one year after they started may be cancelled

unless the student contacts the exjobb coordinator.

1.18 Insurance

Please make sure that you have an insurance that covers any accidents or illness that might

occur during your exjobb. This is your responsibility.

1.19 Payment

It may occur that students doing their projects within a company get some kind of payment. This is an agreement between the student and the company. The exjobb is still a part of the KTH education and must be approved of by CSC.

the case we highly recommend that you first finish your report, make your presentation etc. and get your exjobb (and preferably also your degree) reported in Ladok before you start working.

It is common that the provider of the project wants the student to keep on working on the project, doing the implementation. If this is

Experience shows that it is much more difficult to finish the report the longer period that has evolved since the actual work was performed.

1.20 Reporting in Ladok

The exjobb – as all other courses – is reported in the administrative system Ladok. It is reported in three parts: PRO1 7,5 hp, PRO2 15 hp and PRO3 7,5 hp. What is

included in the three parts as well as how the reporting is initialized varies between the subjects.

2 DURING THE WORK

2.1 How to get about it

More than 20 weeks are needed from the start of the exjobb until it is completed and approved. Supervisor and examiner will need time to read the report, and during this time you probably will not be able to work full time with the exjobb. There will also be some waiting time to make the presentation. You may also wish to take time off for vacation or studies.

The exjobb is part of your education at KTH. Even if you do most of the work at the task provider you must now and then visit KTH.

Most of the points listed below will be described later in this paper.

- *Find a project.* Get a short written description of it.
- *Contact the exjobb coordinator* to get in touch with a supervisor. If you already know who may supervise you, you may contact him/her directly. Already at this stage you should have a short, written description of the project. The description should state a title, the problem and the problem background as well as ideas as how to solve the problem. About one page is usually fine.
- *Contact the supervisor* at CSC. Check that the supervisor thinks that the project is OK and is willing to supervise you.
- Contact the examiner at CSC to get an approval of the project.
- Contact the exjobb coordinator and have your exjobb *registered*. Bring the description of your project and a sheet with your study merits. He/she will help

you to have your exjobb registered with your program administration.

- Have the *exjobb contract* signed by you, by the provider of the project and by the CSC supervisor.
- Make an agreement with your supervisor as to how to document the work process (which is important for the grading).
- If a methodology course is required for your subject, then take it.
- Start your work by doing a detailed *specification* of your project and a *time schedule* for it. Make a *literature list* for the reading part. Keep in close touch with your supervisor.
- Get an approval of the *detailed specification and time schedule* from your supervisor and examiner.
- Work on the *reading part*- You may also start working on the project and writing on the report.
- Have the *reading part examined*.
- Do the *project work* and write the *report*. Keep in touch with your supervisor.
- Attend a *CSC research seminar* if this is required for your subject. This can be done at any time.
- Attend as many *exjobb presentations* as required by your subject. This can be done at any time.
- Make an *opposition* on another exjobb
- When the project work has been finished you finish the *report*.
- When your report is finished you make your *oral presentation* at a presentation seminar.

- Make *corrections* of your report. You have the opportunity to adjust the report according to suggestions from your opponent. The supervisor and examiner may require changes.
- Perform the *language and typography check* of your report if you have not done it earlier.
- Give the *colored exjobb sheet with all signatures* to the coordinator of exjobbs of your subject.
- Send the report in pdf and the abstract in Swedish (Yes, KTH requires it) and English to the exjobb coordinator.

2.2 Group supervision

If you have group supervision your supervisor decides the schedule for the meetings. The supervisor also decides what is to be handed in and how students should prepare for the meetings by reading and commenting on the

work of other students. Active participation is mandatory. The engagement of the group members is important for making the meetings meaningful and rewarding.

2.3 Documentation of the work process

The work process in relation to the specification and time plan makes part of the grading. Therefore you must make an agreement with

your supervisor as how to document it and how to inform your supervisor of it.

2.4 Methodology course

The purpose of the methodology course is to give an insight into how scientific work and research is done and presented. The

methodology course differs between exjobb subjects and not all subjects have one. See the web pages for your exjobb subject.

2.5 Specification with time schedule

The goals of the specification with time schedule are that you should

- get used to delimit a complicated problem,
- get used to a way of working by first stating clearly what to do and then doing it,
- get practice in doing and following a time schedule,
- get used to making an agreement before starting to work on a project
- finish your project on time.

The first couple of weeks you should use to acquaint yourself with the problem and the work situation and writing the specification. The *specification should be approved of within one month* from the beginning of your work. If you can not fulfill this requirement,

you must contact the exjobb coordinator and explain why.

The specification should contain

- A headline indicating that it is a specification of your exjobb and the current date
- your name, the name of the supervisor at CSC and the name of the provider and the supervisor there (if the project is provided outside of CSC)
- a concise definition of the problem,
- a description of the goal of the project,
- a reading list and information on how it is to be examined,
- a description of the methods to solve the problem,

- g) a list of equipment needed to solve the problem,
- h) a clear delimitation of the problem,
- i) a time schedule showing week by week when things are to be done—preferably stating clear sub goals.

Remember to reserve enough time for report writing—it tends to take much time.

In the time plan you should consider any other responsibilities/holidays or vacation you might have.

Some providers of projects ask the students to perform work that the CSC supervisor does not consider within the frame of the exjobb. On the other hand there might be things that the provider of the exjobb may not consider belong to the exjobb (e.g. literature studies, attending seminars and report writing) but that the students are required to do. It is the tasks that CSC and the CSC supervisor

consider belong to the exjobb that should make up 30 credits.

You should discuss the specification with your supervisor and examiner. If possible, try to arrange a meeting with the CSC supervisor, and the company supervisor and yourself. You may also invite the examiner. Give the supervisors and the examiner copies of the specification at least three work days before the meeting. When all parties involved have agreed on the specification, both supervisors, the examiner and you yourself sign it.

Even if a meeting can not be arranged you should have the discussions and have the specification signed – and your colored exjobb sheet.

It may well happen that the specification can not be followed. This is not unusual. If so you must discuss changes you make with your supervisor at CSC and get his/her approval.

2.6 Reading part

The goals of the reading part is that you should

- get used to the researcher's way of working by studying what others have done in the problem domain before attacking the problem,
- practice searching relevant literature,
- get used to reading research literature,
- do a better work by having a good background knowledge of the problem domain.

Normally the reading is done before the project work is done or in the beginning of it. The reading part usually comprises 4±2

weeks of work. It is defined for each individual student by the supervisor, the examiner, and the student and consists of literature from books, articles, conference proceedings, and web material. The material should give direct guidance for the project work.

The reading part is examined by the supervisor. This can be done in an informal way e.g. as an informal discussion.

When describing the theoretical background in the report, you must make a reference to all literature that your reasoning and your work is based upon.

2.7 The role of your CSC supervisor

Your first contact with your CSC supervisor must be made before your exjobb is registered. Then you have a general discussion of the project and the supervisor judges whether it is suitable for an exjobb.

If you make your exjobb outside of CSC, you will have most frequent contact with your external supervisor and less frequent contact

with your CSC supervisor. If your supervisors want so, you may arrange a time for your CSC supervisor to visit you and your external supervisor at your work place. Such a meeting usually gives the external supervisor a better understanding for CSC:s demands and the CSC supervisor a better understanding of the conditions at the work place.

You have the closest contact with your supervisor in the beginning and at the end of the work. In the actual work phase, most students who do external exjobs just report regularly to their supervisor how the work is progressing. You should, though, have a discussion of the disposition of your report with your supervisor before you start the actual writing. If you perform your work at CSC, you must keep a closer contact. Try to arrange regular meetings with your supervisor (the CSC supervisor if you do your work at CSC or the external supervisor if you do your work externally) and try to make notes from these meetings.

If the work is not progressing the way it should, it is important that you discuss this

thoroughly with the supervisor. It is much easier to discuss things when meeting face to face or even over the phone than by e-mail.

You make an agreement with your CSC supervisor as to at what stages he/she should read your report.

You must be aware that supervising you is just one of many tasks of your CSC supervisor. It is up to you to keep in touch with him/her. You can not expect him/her to keep in touch with you. Also you must allow him/her reasonable time to read your report. As a general rule you must count upon two or three weeks for a thorough reading. You must also bear in mind that the supervisor is given credit for 20 hours of work for supervision of one exjobb.

2.8 Attending a CSC research seminar

The reason why we for some exjobb subjects demand that the students attend a CSC research seminar is that we want them to get in contact with the way research at a university is performed. Seminars are arranged by the different research groups on a more or less regular basis during the semesters. Seminars are announced in CSC:s calendar on the web

<http://www.kth.se/csc/kalender>

If the title is in English, the seminar is normally held in English.

You choose a seminar that sounds interesting to you, attend it, and when it is finished you ask a CSC teacher who has attended the seminar or the person who introduced the speaker to sign your green sheet.

Of course, you are welcome to attend any number of CSC research seminars.

2.9 Attending exjobb presentations

Exjobs are presented orally at CSC. Dates and programs for the presentations are found on the web pages for your exjobb subject.

When attending a seminar, you just go there and listen. Bring your green sheet. The number of presentations that you must attend depends on the exjobb subject.

2.10 Opposition

Critique can be directed at most things that are done in this world. Exjobs are no exceptions.

How to sign up for making an opposition varies between exjobb subjects, study the web information.

Most presentations (again depending on exjobb subject) are in Swedish, but many reports are in English. If there are language

problems, please discuss them with the exjobb coordinator of your subject.

The goals of the opposition are that you should practice in reading a report critically to find things that are unclear, questionable, poorly motivated, or might have been done differently but also to appreciate things that have been done and described thoroughly, clearly, and conscientiously. You should have

a constructive discussion with the author of the report.

When the author has presented his work you give your judgement of the report (about 5 minutes) and then pose questions to the author. The questions that you have written down may have to be changed considering what has been said during the presentation. Some questions may already have been answered, new questions may have arisen.

Beside the oral opposition you should make:

- A written judgement of the report. If you want – or your exjobb subject calls for it – you may use a form that is on the web. You give this judgement to the supervisor, the examiner and the exjobb coordinator before the presentation and to the author after the presentation.
- Notes of details that you make in the report and give to the author after the presentation. There might be passages in the text that are difficult to understand, typing errors, typographical errors etc.

When you criticize the report, you should focus on the main points. Ask why a certain

method was chosen or rejected, why a result was interpreted in a certain way or what consequences it may have etc. Try to get an interesting discussion—interesting also to those who have not read the report. Refrain from commenting on details

The opposition should take about 10–15 minutes. So put the most important questions first.

The opposition is part of the grading. You must show that you have penetrated the purpose, goals, results and methods of the work.

Try to make the opposition during the second half of your project. You may not make your opposition on a project where you have cooperated or been in the same group supervision group. Bear in mind that sometimes there are many students wanting to make an opposition and there might be a waiting time.

As a rule each student makes the opposition within his exjobb subject. But sometimes the exjobb coordinators may make exceptions.

2.11 The report

There is a paper in Swedish about how to write the report. If you are not able to read that, you can read any good book on report writing (there are two suggestions at the end of this paper) in combination with the following short text.

Technical/scientific reports should be written clearly and concisely. Most organizations (journals, conferences etc.) that accept contributions have a limit on the number of pages or words. For most of the exjobb subjects there is also a limit on the length of the report. See the web pages for your subject.

The report should be written for fellow students as well as for people working in the field. The report should contain a description of the problem and the problem area as well as of the methods used and the theory behind them. Large blocks of theory may be presented very briefly if a reference to a text

book is included. Ask your supervisor if in doubt.

The report should be written in Swedish or English and it should have a title and an abstract in both languages (Swedish abstract is mandatory even for international students, but it may be short). It may have title and abstract in other languages also. You are responsible for writing it correctly. You may get advice from your supervisor, but it is your job to write it.

The report is official.

Plan the report at an early stage. It is strongly recommended to make an outline of the report at an early stage and to discuss it with your CSC supervisor.

The title of the report is important. It should give a good description of the work, be understandable, and preferably also sound interesting. Abbreviations not commonly

spread must be avoided and terminology not commonly known must be explained

The following formal requirements are put on the report:

- The report should give an introduction to your problem area as well as an introduction to the theory needed, clearly state your problem, describe the methods you used to solve it and why you chose those methods, describe the results you got, present your conclusions of these results and what effects you think that this will have. The order may be different than the above.
- The report should be written in correct English or Swedish.
- The report should have a suitable typographical layout and be delivered in pdf-form.
- The report should be carefully proofread. Typing mistakes etc. should be avoided. Hyphenations must be correct.
- You must state that it is a degree project at CSC, where the work has been performed and who has been your supervisor.
- The report must have an English and a Swedish title as well as an English and a Swedish abstract.
- The report should have a table of contents and the pages must be numbered.
- Illustrations and diagrams should have a legend under the illustration/diagram. Give each illustration a number.
- Tables should have table headers and should be numbered.
- Illustrations, diagrams, and tables should be placed close to the corresponding text. In the text you should refer to the illustration so that the reader knows when to look at it and what it illustrates (e.g. see figure 2). All illustrations must be of good typographic quality suited for presentation on paper. Bear on mind that printouts often are made in grey scale.
- When you present facts or ideas that you have read elsewhere you must give a reference. A reference is needed also if you give a summary of someone's work.

- There must be a consistent and complete literature list.
- Material that gives additional details to the work but is not needed to understand the work may be put in appendices (questionnaires, instructions that you have written etc.). Appendices must be numbered (Appendix 1, Appendix 2 etc.). All pages must also be numbered. Each appendix may start from page 1, or there may be a consecutive numbering through the report and all appendices.
- The reports will be published on the web. This means that they may be printed either one-sided or double-sided depending on the printer used. CSC also makes a number of double-sided paper copies. So the layout must work in both cases. Thus do not number the introductory pages (abstract etc.) and let the first page of the first chapter be page number one. This allows us to insert blank pages before making the paper copies. Also let the page numbers be centered.
- A pdf of the complete and final version of the report must be handed in as well as a html version of the abstracts.

The layout should be as follows, where each item should start on a new page:

- 1 Front page that is made by CSC
- 2 Title page that is made by CSC
- 3 Abstract in English
- 4 Title and abstract in Swedish (if both abstracts fit on one page it is better to put them on the same page)
- 5 Preface (optional)
- 6 Table of contents.
- 7 The chapters of the report ending with the bibliography
- 8 Appendix A
- 9 Appendix B etc.

Before giving the report to your supervisor, your examiner or the exjobb coordinator, please ask how he/she wants it. Most people read reports printed on paper. People have different word processors and attachments to e-mail sometimes do not work well.

2.12 How to write references in the report

There are many ways of writing a list of references. Chose one and use it consistently. We recommend the following (article, book, anthology, and web publication):

- Askvall, S. 1985. Computer supported reading vs. reading text on paper: A comparison of two reading situations. *Int. J. Man-Mach. Stud.* 22, 425–439.
- Card, S. K., Moran, T. P. & Newell, A. 1983. *The psychology of human-computer interaction*. Erlbaum. ISBN 0-1234-5678-2.
- Lancaster, F. W. & Warner, A. 1985. Electronic publication and its impact on the presentation of information. In *The technology of text: Principles for structuring, designing, and displaying text*, 292–309. D. H. Jonassen, ed. Educational

Technology Publications. ISBN 0-4321-8765-9.

- Meldon, W. 1997. *Reading from the web*. Report from MIT human factors lab. <http://www.mit.edu/compsci/humanfactors/report9734.html> Latest visit November 2000.

For information that you find on the web, try to specify author, title etc. as you would have done with printed material. Also state when you last visited the page.

In the text we recommend giving the author's last name and the year of publication. Put either just the year or both the name and the year in parenthesis so that the sentence is readable without reading the parenthesis: Askvall (1985) has compared reading... Using 6–9 items in a menu is recommended (Card et al. 1983).

3 FINISHING UP

3.1 Check of language, typography and formalities

You are responsible for making a thorough check of language, typography and formalities of your report. It is your responsibility that things are presented logically, the language is correct and suitable, that the report is conscientiously proof-read and meets the demands on a degree project report.

It is usually a good idea to get help from a friend, parent, relative or other person that you find suitable. It is often difficult to find errors in a text that has been written by yourself.

We have made a check list for the report that is found on the web. Print it out. Go through it point by point and check that all parts of the report meet the demands. Tick the points as you work.

If you make any changes in the report after this check, you must check the altered parts.

The exjobb coordinator samples that the language check has been performed. See the web pages for your subject.

3.2 Approval of the report

Before signing up for the oral presentation the report must be approved of by the supervisor. For some subjects it is sufficient that the supervisor considers the report

almost finished while others require a completely finished report. See the web pages for your subject.

Before handing in the report to the supervisor and the examiner ask how they want the report. When handing it in, don't forget to tell why you are handing it in so that the receiver knows what to do with it.

The supervisor needs time to read the report – normally not more than two weeks. Then you must make alterations. Often several iterations are needed.

A well structured report written in a clear language usually is relatively easy to read. A

poorly structured report with language errors and poor typography takes much more effort to read, calls for more alterations and usually more iterations. If the supervisor judges the report to have too many defects he/she will return it to you without having read all of it but with hints on how to approve it.

When your supervisor has approved the report you may perform the language check and give it to the examiner for approval.

3.3 Oral presentation

All exjobs at CSC must be presented orally at a presentation seminar at CSC.

Time schedules for presentations as well as when and how you book a time for presentation are presented on the web pages for your exjobb subject.

The oral presentations are public and employees and students at KTH as well as other people interested (e.g. friends and relatives) are welcome. If you have done your exjobb externally, you should invite your external supervisor.

You must prepare yourself for the oral presentation. It should include a presentation of the problem, a short description of what

you have done, a presentation of the results you achieved, your interpretation of the results, and a discussion of what influence the results may have. Do not go into details. There is much to say in a short time. This calls for good preparations. Using a computer presentation is usually a good idea. Making a rehearsal is also usually a good idea.

The presentation should take about 25 minutes + time for opposition and questions. To talk for exactly 25 minutes may be difficult, but keep it within 20–30 minutes. Shorter or longer time indicates poor preparation.

The presentation makes part of the grading.

3.4 After the presentation

After the presentation you read the comments from your opponent. They may induce changes in your report. If the opponent has found spelling errors and similar things they should be corrected. If the opponent has suggested another method for your work, you should not redo the work using that method. But it may be a good idea to motivate why you did not use it. If any doubts as to what to change, ask your supervisor.

If the report has not been approved of by the examiner or the language check has not been done, see to it that this is done.

The final report must be handed in to the exjobb coordinator of your subject in pdf. A html version of the abstracts must also be handed in. Please see the web information.

You must also give your colored sheet with all signatures to the exjobb coordinator. Then, finally, your exjobb will be reported as finished into the KTH administrative system LADOK.

CSC then makes the front pages and puts the report and the abstracts on the web (unless you explicitly ask us not to). If you want paper copies of your report you may order (and pay) them at the student office.

Please fill in the enquiry found on the exjobb web pages.

If the exjobb is the final course for your degree, you should apply for a diploma with your program administration (studievägledning).

4 REQUIREMENTS

The exjobb consists of two parts: the investigation you make and the report you write. Both parts are important. You must also present your work orally and act as an opponent when some other student presents his/her work.

The following requirements must be fulfilled (in some cases individual changes are made for foreign students)

- meet the *prerequisites* in order to start,
- get the *project idea* approved of by supervisor and examiner,
- have the exjobb *registered* with CSC
- have made a detailed *specification* of the project including a *time schedule* and a reading list approved of by the supervisor at CSC,
- given an account of the *work process* to the supervisor in the way agreed upon
- had the *reading part* examined by the supervisor,
- taken the *methodology course* (if this is required for our exjobb subject),
- for media technology: taken active part in complementary *group supervision*,
- taken part in a *CSC research seminar* (if this is required for our exjobb subject),
- written a *report* describing your work and that is approved of by the supervisor and the examiner,
- having made the language and typography check of the report,
- having been present on the number of presentations stipulated by your exjobb subject
- having made an opposition on another exjobb in your subject,
- having made an oral presentation of the exjobb at CSC
- having handed in the report in pdf and the abstracts in html

There may be additional requirements for your exjobb subject..

These requirements are subject to change. If you present your exjobb more than one year after the registration you must fulfil the requirements valid at the time of presentation (the prerequisites required when you started will be sufficient).

5 SUGGESTED LITERATURE

- Björk,L & Räisänen, C. 2003. *Academic Writing: a university writing course*. Studentlitteratur AB <http://www.adlibris.com/se/product.aspx?isbn=9144030746>
- Silyn-Roberts, H.2010. *Writing for Science*. Pearson Education. <http://www.adlibris.com/se/product.aspx?isbn=1877258342>

APPENDIX A: EVALUATION CRITERIA

Evaluation criteria for the degree project. The student should, for the respective criterion:

Criteria	Process	Engineering-related and scientific content	Presentation
Excellent	<ul style="list-style-type: none"> Independently plan and carry out the project within agreed time frames, show good initiative and be open to supervision and critique Independently identify one's own need for new knowledge and acquire this knowledge Show a good ability to adopt the perspective of another's work and formulate relevant and constructive critique 	<ul style="list-style-type: none"> From problems/inquiries and methodology, show a very good ability to apply engineering-related and scientific skills like problem formulation, modelling, analysis, development and evaluation in a systematic way Where this is relevant, show awareness of societal and ethical aspects, including economically, socially, and ecologically sustainable development 	<ul style="list-style-type: none"> Show a well disposed report, with clear accounts of the project and the results, clear analysis, and well founded argumentation, as well as good language usage, format and scientific accuracy Show a good ability to orally present with clear argumentation and analysis, and also a good ability to discuss the work
Good	<ul style="list-style-type: none"> Plan and carry out the degree work within agreed time frames, show initiative and be open to supervision and critique Show the ability to acquire new knowledge Show the ability to adopt the perspective of another's work and formulate relevant critique 	<ul style="list-style-type: none"> From problems/inquiries and methodology, show a good ability to apply engineering-related and scientific skills like problem formulation, modelling, analysis, development and evaluation in a systematic way Where this is relevant, show awareness of societal and ethical aspects, including economically, socially, and ecologically sustainable development 	<ul style="list-style-type: none"> Show a well disposed report with clear accounts of the project and the results, analysis and argumentation, as well as good language usage and format Show a good ability to orally present and discuss the project
Sufficient	<ul style="list-style-type: none"> Carry out the project work within agreed time frames, show certain initiative and be open to supervision and critique Show a sufficient ability to acquire new knowledge Show a sufficient ability to adopt the perspective of another's work and formulate critique 	<ul style="list-style-type: none"> From problems/inquiries and methodology, show a sufficient ability to apply engineering-related and scientific skills like modelling, analysis, development, and evaluation Where this is relevant, show a certain awareness of societal and ethical aspects, including economically, socially, and ecologically sustainable development 	<ul style="list-style-type: none"> Show a written report with acceptable structure, format and language usage Show the ability to orally present the report
Insufficient	<ul style="list-style-type: none"> Insufficient respect for agreements, severe lack of independence, or disregard for supervision. Lacks the ability or desire to acquire new knowledge. 	<ul style="list-style-type: none"> Significant lack of engineering-related or scientific skills or lack of methodology despite the request. 	<ul style="list-style-type: none"> Lacks important elements in the written report despite the request, or lack of the ability to orally present or discuss the project.

In order to pass the project work, all three criteria must be met with a grade of sufficient or better.

APPENDIX B: CSC GUIDELINES FOR ASSESSMENT OF DEGREE PROJECTS

This document provides detailed guidelines on what should be assessed and describes the process of grading. Most of these guidelines are applicable to exjobb subjects. The main examiner for the exjobb subject may decide on specific guidelines for the subject.

Five items are assessed and weighed according to the weighting scheme in Section 1.10.

1 Contents of the report

Does the report describe a well-executed project that fills established requirements for content? Are the issues of the problem addressed? Are alternative approaches, results and reflections satisfactorily described?

The supervisor proposes a rating and gives a short motivation when the report is approved for presentation. The examiner determines the rating when the final version of the report is approved.

2a Process

Has the project followed the project plan? In case of deviations: Are there satisfactory explanations for these deviations – especially regarding time table and results? Has the advice, suggestions and criticisms from the supervisor been well received? Has legitimate criticism from the opponent been well-received? Has the student been able to assess the quality of the presentation independently (without multiple iterations with the supervisor)?

In case of group supervision: Has the student satisfactorily performed the group assignments? Has the student given creative, detailed and relevant feedback – focusing on structure, content and method – to the other members of the group? Has the student reacted positively to relevant comments on his/her work? Has the student done the assignments on time?

The supervisor proposes a rating with and gives a short motivation when the report is approved. The exjobb coordinator can also propose a rating from his/her perspective. The examiner determines the rating when the degree project is approved

2b Opposition

Did the student perform the opposition distinctly and given the impression that he/she has penetrated and understood the implementation of the project of the respondent including any possibilities for alternative approaches? Was the opposition interesting?

The rating is set by the examiner chairing the seminar immediately after the seminar and is normally not announced to the audience.

3a Written presentation

Is the report interesting and in accordance with established requirements for language, style, relevance, structure, typography and use of illustrations?

The supervisor proposes a rating and gives a short motivation when the report is approved. The exjobb coordinator who checks the structure and style, gives his/her comments. The examiner then determines the rating.

3b Oral presentation and defense

Did the student give an interesting presentation for non-specialists in accordance with established requirements for preparation and time keeping? Were the questions from the auditorium and the opponent satisfactorily answered? Note that presentations where technical equipment has not been used can get the highest rating.

The rating is set by the examiner (the examiner chairing the seminar if the examiner of the student is not present), in consultation with the supervisor (if present) immediately after the seminar (when the students have left).

General guidelines

A failed presentation or opposition must be re-made. What has been rated sufficient or better can not be improved to get a better rating. The process can not be re-made.

The only graded Ladok-moment is the third and final, PRO3.

The student should be given feedback including at least the five numerical values and the final grade but preferably somewhat more particular. The feedback is normally given orally

The final grade is set by the examiner when the final version of the report has been delivered. As in all examinations, the grade can not be appealed. According to KTH rules, a student can not improve on a degree project to get a better grade.