

# Writing a Bachelor Thesis at the Department of Earth Sciences

A guide for students, advisors, and examiners

2016+ version

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## ***Acknowledgements***

This manual has been assembled by the Department of Earth Science Program Committee for the Earth Science program.

## The Thesis process and the degree

This manual is designed to guide students, advisors, and examiners through the process of completing a Bachelors thesis at the Department of Earth Sciences (GEO).

Your thesis topic should be chosen through consultation with an advisor and deal with a topic within your subject area of interest. The project should have a clearly stated research question.

The project is to be presented in written form in a thesis, and can be in English or Swedish. The project is also to be presented orally at a public seminar. The student will also serve as an opponent for another student's oral and written presentation.

### **GV0415 the thesis course**

The thesis work for the bachelors degree is carried out within the framework of a regular course (GV0415), and this course is held during April and May. However, a significant amount of work must be done before the beginning of April each year, so be sure to contact the Course Leader (Mark Johnson). The course has a syllabus with several mandatory lectures and exercises on scientific writing.

The grading system for the course is U, G, and VG, where U is failure (underkänd), G is pass (godkänd), and VG is pass with distinction (välgodkänd). Prior to course start, the project description needs to be approved by the student's advisor and examiner.

### **Who is responsible for what during thesis work?**

Every thesis project is an independent study where the responsibility for the project lies almost completely with the student. But the advisor, the examiner and the Course Leader (*kursansvarig lärare*) all have tasks for which they are responsible. The following table shows the duties of each person involved in the thesis.

<b>PERSON</b>	<b>DUTIES</b>
<b>Student</b>	<ul style="list-style-type: none"><li>• <b>Actively investigate thesis possibilities and advisors</b></li><li>• <b>Register for GV0415</b></li><li>• <b>Complete and sign project description prior to the beginning of the course</b></li><li>• <b>Send approved project description to <i>studievägledaren</i></b> <b>Carry out the project within the course period</b></li><li>• <b>Serve as opponent for another student's thesis presentation</b></li></ul>
<b>Advisor</b>	<ul style="list-style-type: none"><li>• <b>Approve project description</b></li><li>• <b>Ensure that the project can be completed within the given time plan</b></li><li>• <b>Critically read manuscript no more than 2 times</b></li><li>• <b>Be available for the student at least 45 minutes per week of the course period</b></li><li>• <b>Arrange examiner and thesis seminar with Course Leader</b></li><li>• <b>Be present at the seminar</b></li></ul>

	<ul style="list-style-type: none"> <li>• Approve and sign project description prior to project start</li> </ul>
<b>Examiner</b>	<ul style="list-style-type: none"> <li>• Approve and sign project description prior to project start</li> <li>• Ensure that the project can be completed within the given time plan</li> <li>• Be present at the seminar</li> <li>• Critically read and grade thesis and report grade to course-Leader</li> </ul>
<b>Course Leader</b>	<ul style="list-style-type: none"> <li>• Contact and inform students at the beginning of fall and spring semester to give an introduction to the thesis program</li> <li>• Be in charge of the GUL course page</li> <li>• Produce syllabus</li> <li>• Maintain a list during each semester of the students involved in thesis work with a check list over their progress including project description, advisor's name, and examiner's name.</li> </ul>

## ***Advising***

It is important that each student begins to think about their thesis project well in advance of the course start. It is the student's responsibility to check with possible advisors and with the Course Leader for thesis ideas. Students themselves may also suggest project ideas. Some thesis projects are carried out externally at a local consulting firm or civic agency. In these cases, each student must have an external advisor where the work is being carried out. Additionally, for external thesis projects, the student must have an advisor that is employed at GEO to serve as advisor. Theses may also be carried out abroad.

Once the project begins, the student is entitled to receive 45 minutes/week advising time from their advisor. This is the minimum expected as agreed upon by the Faculty of Science. Changes in the time plan can certainly be made during the course of the project with consultation among the student, advisor, and examiner. After the course period has ended, the student no longer has the right to demand time from their advisor.

## ***Thesis language***

Theses at the bachelor's level may be written in Swedish or English.

## ***Project description***

When the subject and topic have been agreed upon between the student and advisor, the student needs to write a work plan, called the project description. A brief, but complete project description needs to be delivered to the advisor and examiner, and these must approve the plan prior to the start of the course/project. The research question must be clearly stated and the timeframe for the work must be reasonable.

The form on the following needs to be filled out.

# INDIVIDUAL PROJECT PLAN

## Degree project in environmental sciences, advanced level (Bachelor of Science)

Course name:		Course code:		Credits	
Year (start):		Period:	<input type="checkbox"/> Jan-Mar <input type="checkbox"/> Mar-Jun <input type="checkbox"/> Jun-Sep <input type="checkbox"/> Sep-Nov <input type="checkbox"/> Nov-Jan		

### Student details

Name:		Personal id#:	
Address Street			
Area code		City	
Epost:		Phone:	

### Project title (preliminary):

--

### The project will be carried out at (specify location including office and laboratory):

--

Does this project require an ethical permit?	Yes	Permit number	
	No		

### Supervisor (GU)

Name:		Position:	
Department:			
Email:		Phone:	

### External supervisor (if applicable)

Name:		Position:	
Organisation:			
Street			
Area code		City	
Email:		Phone:	

### Examiner

Name:	
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### Project plan

Add on separate page, the plan should include the following headings:

**Background** short description of scientific background

**Aim and/or hypothesis**

**Methods** planned experimental set-up including statistics if relevant for the project

**Budget** estimates costs of the project

**Time plan** rough sketch for the entire project, including all stages of the experimental work, analysis, writing and preparing oral presentation. Add preliminary dates for examination (oral and written).

Also add deadlines for getting feedback from your supervisor, and how you will keep in contact

\_\_\_\_\_  
Signature, supervisor

\_\_\_\_\_  
Signature, student

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature course leader

When the project description is completed and approved by the advisor and examiner, a copy is delivered to the student advisor (*studievägledaren*).

Throughout the project, the student needs to be well aware of the timeframe, and to make necessary adjustments. It is extremely important that the student make finishing within the stated timeframe a *high priority*. ***Late projects cannot receive the grade of VG.***

### ***Example of a timeline***

The following is an example of what a timeline could look like for a bachelor's thesis carried out during the 4th Quarter (April and May). Note that the first draft of your report must be done almost a month before the end of the course.

- Prior to course start (Before w. 13). Find a project by contacting potential advisors or companies. Complete your project description before the courses begins.
- w. 13 Start course
- w. 14-15 Prepare and carry out field and lab work. Write outline.
- w. 15-18 Lab and field work. Peer review.
- w. 18-20 Field work and lab work should be done by now. Writing and figure work. Peer review.
- w. 21 Send first draft to advisor.
- w. 21-22 Rewrite, figure work.
- w. 23 Give your report in its as-final-as-can-be form to opponent, advisor, and examiner.
- w. 23 Geovetenskaplig Examensarbete Konferens.
- w. 23-24 After corrections from seminar, give the final version to the vaktmästare. Give a printed copy to your advisor and examiner..

### ***Critical review of the thesis***

The thesis shall be read thoroughly and critically by the advisor not more and not less than two times. The final time is when the student is completely finished, and the first time should be when the student has written enough of the report that extensive feedback is required.

The examiner reads the thesis only when it is completed, and the student and advisor may choose to do so prior to printing. However, the job of the examiner is to grade, not to edit!

However, the examiner may choose to suggest changes to the report, and these may affect the final grade. The student then can make these changes and submit it a second time for the examiner to grade.

### ***Seminar***

All students must present their thesis work at a public seminar using Power Point. The date of the seminar is arranged by the Course Leader. The advisor, opponent, and examiner must be present at the seminar. The opponent is chosen by the Course Leader and is usually a student working on a thesis project in a similar field. It is assumed that every student will serve as an opponent at a thesis presentation.

### ***The roll of the opponent***

The opponent is to critically read through the final version of the thesis looking carefully at the structure, grammar and style, and scientific content and argument. The final version must be presented to the opponent at least three days prior to the seminar.

The opponent must be present at the seminar, and it is the opponent that leads the discussion after the seminar with comments and questions based on the seminar and the opponent's careful reading of the thesis. This discussion should last 10-15 minutes. To make this easier, the following *peer-review-formulär* has been developed.

# Peer Review Form

(used by another student to help improve your manuscript, not for setting grades)

**Author:**

**Master's Thesis manuscript:**

The main purpose of the review is to help the author improve the manuscript. In this context it is important that you give honest answers rather than being politely positive or unnecessarily vague. In addition to the notes within the manuscript, please answer the following questions. For each of the questions that you answer "Partly" or "No", please explain these on the backside or on a separate paper. "Yes" means that you can not see anyway to improve this part of the manuscript (this is normally not so common as is "Partly"). You can also explain a "Yes" answer if you like. Give a copy of your review to the author and to the Course Examiner.

	Yes	Partly	No
1. Is the title concise, informative and reflecting the content?			
2. Is the abstract informative and dealing with			
3. Does the author introduce the problem/hypotheses well?			
4. Are the objectives clearly stated?			
5. Are the methods appropriate for the objectives?			
6. Are the methods sufficiently described to allow judgment of the results?			
7. Have you found any errors of fact or interpretation?			
8. Are observations and interpretations clearly identified?			
9. Has due account been taken of previous work in the field?			
10. Are the interpretations scientifically sound?			
11. Does the discussion connect well with the issues raised in the introduction?			
12. Are the references written in a consistent and proper format?			
13. Are the illustrations relevant, instructive and well composed?			
14. Is the language usage grammatical and clear?			
15. Should the length of the manuscript appropriate (not too short or too long)?			

***Please also specify:***

What is the main strength of this paper?

What is the main weakness, and how can this best be addressed in revision?

Any other comments?

## ***Final steps and thesis grade***

The thesis is graded by the examiner.

Each thesis is critically reviewed for its grammar and its scientific content prior to publication in Geo's B-series. This critical review is performed by the advisor.

Here are the final steps (the exact dates change from year to year).

- 1) **2 WEEKS BEFORE THE SEMINAR** The student gives their first, official complete draft to the advisor (remember, the advisor is asked to read it just twice).
- 2) **5 DAYS BEFORE THE SEMINAR** This version should be returned ASAP to the student from the advisor so that revisions can be made.
- 3) **4-7 DAYS BEFORE THE SEMINAR** The student makes changes and gives it to the advisor for the second reading.
- 4) **3 DAYS BEFORE THE SEMINAR** The student sends the latest version to the examiner and opponent.
- 5) **PRIOR TO THE SEMINAR** Examiner reads (but does not grade) and the opponent reads prior to the seminar.
- 6) **FINAL PROCESS STEPS**
  - a) *ASAP* after the seminar, the student gives the final version to the advisor (this is the second time the thesis is read by the advisor).
  - b) The student makes advisor's corrections and gives the 'final' version to the examiner.
  - c) The examiners job is to **GIVE THE WORK A GRADE**.
  - d) The examiner *may* choose to tell the student further improvements to the thesis (the examiners job is not to edit and rewrite!!!) and if these improvements could change the grade (from U to G, or G to VG).
  - e) Once the examiner has graded the thesis, the student is to submit the thesis to Muhamed on a USB, and he will print and publish it.
  - f) The examiner reports to Mark the grade, who reports to the studnet adminsitator.

The following grading form has been developed by the Science Faculty for grading theses.

## **Rules for grading of independent studies and theses within the Science Faculty at the University of Gothenburg**

The thesis grade is determined by the examiner after consultation with the advisor.

The examiner and the advisor are NOT to be the same person.

The following grading scale is used:

- Fail (U)
- Pass (G)
- Pass with Distinction (VG)

### **Grading criteria**

The grading is based on the following 5 criteria:

- 1. Understanding**
- 2. Implementation**
- 3. Results, analysis, and interpretation**
- 4. Oral presentation**
- 5. Written report**

Under several of these points, the examiner will also consider the student's ability to carry out the project independently as well as their ability to keep to the time plan.

The examiner will use the following grading scale:

- 0 - Nonexistent
- 1 - Unsatisfactory
- 2 - Sufficient
- 3 - Good
- 4 - Excellent

The final grade represents a combination of the 5 grading criteria, although it is difficult to weigh them completely evenly against each other. To get a passing grade (G), all of the 5 categories must have at least a score of 2. If need be, these criteria can be subdivided in the courses *kursplan*. Additional criteria may be added, but the students must be informed at the beginning of their thesis work.

These criteria shall generally be applied to all independent projects and theses at both the undergraduate and graduate level.

## **Explanation of the grading criteria**

### **1. Understanding**

The student shall show understanding of the thesis project. This is based on strong familiarity with the subject area, the theoretical background, as well as the scientific context of the current project.

### **2. Implementation**

The student shall display the ability to plan and carry out the thesis project, whether it be a field project, a lab experiment, or a theoretical report. Independence, self-motivation, and the ability to keep to the time frame are all to be considered here.

### **3. Results, analysis, and interpretation**

The student shall show the ability to process and analyze their results with those tools appropriate for this subject area. The student shall also with the help of the literature confidently and convincingly show the context and meaning of their results.

Independence and self-motivation is considered here as well. The absolute scientific quality of the results shall not influence the grade if the quality is not a result of the quality of the implementation.

### **4. Oral presentation**

The student shall design their oral presentation in a way that the target group's interest is addressed. The presentation should be clearly constructed and delivered, the content must be correct, and the images (figures and photos) must be clear, easy to read, and appropriate. The presentation will stay within the time guidelines. The student will demonstrate good contact with the audience as well as answer questions and be able to discuss the project.

Here, too, is it appropriate to judge the student's ability to orally communicate goals and problems concerning the project during the course of the project. Here, too, is where a student's opposition to another student's thesis work considered.

### **5. Written report**

The student shall ensure that the form and content of the written report reflects the praxis of current scientific writing and communication. For the given subject areas, the student must have access to the standard, mutually agreed upon form for scientific writing within that subject. The report must be grammatically correct, clear, and logical, while at the same time easily read and able to capture the reader's interest- The conclusions should be clear and logical from the given results, and these must be convincingly argued.

Relevant literature must be referred to sufficiently and correctly, and the references cited section must be correctly constructed.

Grade repor for independent study in (subject) \_\_\_\_\_

Course number: GVN0415 Hp: 15

Semester: Year:

Name:

Personnummer:

Project title:

Advisor:

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<b>Criteria</b> <sup>i</sup>	<b>Grade</b> (0-4 points)
Understanding	
Implementation	
Results, analysis and interpretation	
Oral presentation	
Written report	
<b>Total</b>	

$0-X p = U; X-Y p = G; Y-Z p = VG$ <sup>ii</sup>

**Total grade:**

**Date**

*Examiner*

### **Criteria**

<sup>i</sup> to be adjusted to local needs and these can be weighted differently plus may included several subheadings

### **Grading interval**

<sup>ii</sup> the total score depends on the wieghting of each, but it must always be clear what the final score is and what each category's grade is. For the student to get a passing grade (G), they must reciev at least '2' in each category.

## **Printing the thesis**

When the thesis is finished, the seminar is given, and the final version is approved, the thesis is to be printed as part of GEO's publications B-series.

1. The student needs to first contact the library (at Geovetarcentrum) to obtain a number in the B series.
2. Printing is done by the Printing Office (currently Muhamed Trnka, *vaktmästeriet*). The student will give the completed version of the text to the Muhamed on a USB stick.
3. At the same time, the student must fill out a REKVISITION EXAMENSARBETE form that can be obtained from Muhamed (see next page).
4. The cover page and the title page will be constructed by the the Printing Office. However, the student may wish to include a photo or figure to be placed in the 'square' on the cover. This must be delivered to Muhamed as well.
5. Please keep the number of color pages to a minimum.
6. The Printing Office will copy, add cover and title pages, and bind the thesis.

GEO pays for 10 copies of the student's thesis—any additional copies must be paid for by the student or advisor. Of these 10 copies, 2 go to the library, three to the department (including advisor and examiner), and 5 go to the student.

*Reporting of the final grade by the examiner can only be done AFTER the thesis is printed.*

A pdf of the final thesis is to be placed on the GEO website by the Printing Office.

## **Research at GEO and potential thesis topics**

On GEO's website, you can read about the research interests of teachers at GEO. Check out the following site (although it might not be up-to-date):

<http://gvc.gu.se/utbildning/examensarbeten-och-avhandlingar/mojliga-projekt>

## **Consulting companies in the Gothenburg area that have supported thesis students i the past**

Students are encouraged to take contact with consulting compaines in the area in order to get a project outside from GEO. In the past, our students have worked, among others, WSP, BergAB, NCC, COWI, Ramböll, and Geosigma, as well as Trafikverket. The best way to contact these companies is to mail or e-mail them, and then to follow up with a phone call. GEO staff might have personal contacts that can be the basis for contact.

Rekvision för examensarbete som ska lämnas med USB  
minne till vakmästeriet

### REKVISION examensjobb

Beställande handledare:.....Telefon:.....

**Kopiering Svart/vit Sidantal ..... Upplaga.....**

*Man får 5 gratis färg fler med lärarens tillstånd*

**Kopiering färg** Antal ex: ..... Sidan: ....., ....., .....  
.....

**SERIE:** ..... **Studentens namn:** .....

Examen **mail:**

Kandidat (Bachelor) 15 hec  
Magister Master one year) 30 hec  
Magister (Master two year) 30,45.60

Uppsats	B serien	C serien
Bibliotek	3 ex	2 ex
Avdelning:	..... ex	..... ex
.....	..... ex	..... ex
.....	..... ex	..... ex
.....	..... ex	..... ex
.....	..... ex	..... ex
Eleven får	5 ex	.....ex
Extra bet av elev:		.....ex
Extra:.....	.....	.....ex
Betalas av: .....		

OBS!

Vid examensarbete skall följande information beaktas

**Lämnas: svartvit enkelsidig förlaga ej hålåd ej häftad sidnumreringen centrerad.**

Skriv **färg F** i övre högra hörnet på sv/v förlagan.

**B-nr beställs på Biblioteket när arbetet är färdig för tryckning.**

En diskett eller **USB** med arbetet i **Word** och **PDF** lämnas (kan vara i delar appendix, introduktion, bilagor)

Avdelningen betalar för **5 färgsidor** som är ett **måste resten betalas av elev eller handledare**

Priser:	Inbinding + omslag:	7:-	Färg A4 dubbelsidig utskrift	3:-
	Färg A3 enkelsidig utskrift	3:-	Färg A4 enkelsidig utskrift	1.50:-
	Svartvit kopiering internt:	0.30:-	Svartvit kopiering externt	0.40:-