Course analysis
GEON07 Quaternary Climate and Glaciation History
Spring term 2019

General:
This year the course was followed by 10 students, nine of which answered the course evaluation (appended below). This means that there is a solid basis for the course analysis. The outcome of the course evaluation is generally very favourable. It is clear that the learning outcomes have been well fulfilled in general, the structure and content of the course are appropriate, and the efforts provided by the teachers are appreciated by the students. Also, the text book and additional reading generally seemed to be appropriate for the course. And as usual, the report writing, as well as the interaction during, and feedback following seminars and presentations are highly appreciated. The field trips were also given very positive critique by the students. Nevertheless, some specific comments and minor concerns brought forward are worth mentioning and using as grounds for improvements during next year’s course. These are summarized below.

Summarized comments and potential improvements:
1. A couple of students have noted that some unnecessary repetition occurred from previous courses, such as stable isotope theory and the history of the Baltic Sea. Some have also noted overlaps and repetition within the course, apparently as a result of insufficient communication between the teachers. *The former point is difficult to get around as all students do not follow all our courses at master’s level, but the latter criticism is relevant and will be met by more thorough communication between the teachers before and during next year’s course.*

2. Some students suggest a more consistent division between chronological and thematic lectures. *This did not end up in the best possible order in this year’s schedule due to the unavailability of one of the teachers during the early part of the course, but can hopefully be improved next year.*

3. Several students have noted that the work load was heavy at the end of the course, that the long fieldtrip should take place earlier and that the written exam should be placed at the very end of the course. *This is difficult to accommodate as the long fieldtrip must take place in late May due to the northerly location, commonly with abundant snow earlier in the season, but a short break (one or at least half a day) between the report presentations and the onset of the fieldtrip will be considered. Also, a slightly earlier return from the long fieldtrip might be possible.*

4. Some students noted that there were a little too many papers in the reading list. *This will be kept in mind when we update the reading list next year, although we strive to include a fair number of relevant papers in order to cover the relatively broad subject.*

5. Perhaps related to a generally high work load (see point 3 above), a couple of students have noted that they experienced too many seminars (four this year). *Previous course evaluations (and also this one) have shown that the seminars are highly appreciated by the students, not least through providing concrete student activity. Therefore I am*
inclined to keep them unchanged next year, but perhaps they could be scheduled more wisely.

6. More practical (computer-based) exercises are warranted by one student. This will be considered, possibly as part of the climate modelling component of the course.

7. The written exam was considered too extensive in relation to the allocated time (but still useful) by several students. This comment has occurred repeatedly over the years, in spite of substantial reductions during recent years. The criticism will be kept in mind but I consider the extent and duration of the exam as generally appropriate.

8. Some students have noted that some of the lecture slides were not sufficiently clear and informative. This will be brought up at a preparatory meeting with the teachers before next year’s course.

9. One student requested more consistent labelling of lecture notes on the learning platform. This will hopefully be accommodated when we shift to the new learning platform Canvas next year.

10. One student requested a bit more specific feedback on oral communication, including comments on linguistic mistakes etc. We will try to keep this in mind next year.

Unfortunately, the course representative was not available for a review of the course analysis.

Dan Hammarlund
Course coordinator
GENERAL: Did the course fulfil your expectations?

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Mean: 4.0
Standard Deviation: 0.5

Really enjoyed the course and its building upon GEON05 & GEON06
The course combined several teaching techniques such as excursions, seminars, lectures, literature reading and made the subject a pleasant journey. The teaching methods and materials were relevant to the subject and overall the course fulfilled by expectations.
Yes, it connected a lot of things but sometimes was a little bit confusing because there were so many different teachers having different ways of teaching.
The course was harder than I expected
Some repetition with previous courses (e.g. History of the Baltic Sea), otherwise broadly as expected
Sometimes I was disappointed for repeating information from previous GEON05 course, but I have amazing, interesting and better than expected information/study area, also.
The only other thing I could expect is a little bit more of practical exercises
**GENERAL: Did the course increase your interest in the subject?**

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**Comment**
- Yes
  - It gave knowledge about different subjects and overall increased my interest
- Yes, especially the independent project work
  - Areas, where I thought I am really interested and not that much -change, but the course increase my interest in the subject mostly.

**GENERAL: Was the introductory information correct and satisfactory (aims, structure, content etc.)?**

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**Comment**

The introductory information were correct

I did not always get the structure of the course in the beginning. At one point it made sense how the lectures were connected.

Yes, exception was return time of the field trip (schedule suggested afternoon instead of late evening)

Yes

### GENERAL: The course has given me valuable knowledge ans skills for my continued studies and working life.

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**Mean**

4.2

**Standard Deviation**

0.7

**Comment**

It provided insights and knowledge of a really nice subject that I wish I can use later during my working life

Yes, enhanced understanding of large scale climatic processes during the Quaternary and approached to reconstructing Quaternary environments (especially via seminars and project work)

very much

Again the practical part. Otherwise, the knowledge I've got is very useful.
GENERAL: I have attained all the learning outcomes:
Following active participation in the course, the student shall:
● be able to give an overview of the global climatic and environmental development during the Quaternary, and its major causal relations.
● possess comprehensive knowledge of the Late Quaternary stratigraphy and the glacial, environmental, and climatic development of northern Europe, and a general insight into these topics in other parts of the world.
● independently and at a reflective level be able to analyse and interpret different types of proxy data obtained from terrestrial and marine stratigraphies and ice cores, and based on such interpretations and comparisons be able to reconstruct climatic and environmental changes during the Quaternary.
● be able to assess and evaluate ongoing global and regional climate changes as well as future climate scenarios in the perspective of Quaternary climate variations.
● be able to comprehend, critically assess and discuss scientific publications within the field, and based on this type of literature be able to summarize current research issues.
● be able to communicate in writing and speaking in English and in a balanced way be able to utilize scientific terminology associated with the topic.

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![Bar chart showing the distribution of responses](chart.png)
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- be able to comprehend, critically assess and discuss scientific publications within the field, and based on this type of literature be able to summarize current research issues.
- be able to communicate in writing and speaking in English and in a balanced way be able to utilize scientific terminology associated with the topic.

Comment
I have attained all the learning outcomes or at least gave my best shot.
It was very nice that we worked with so many published articles, that really helped to become "more scientific"
Most topics have been covered, maybe not in great detail
I would like to take more practice about proxies. I think it is really interesting and important. I have general understanding, but it would be nice to have kind of "game" to relate proxies - objects - results. especially where objects like lake sediments could have different proxy for same result or opposite. my answer mostly based on Exam Q1.
but if this "proxy knowledge" connected only with number of read articles, so maybe it's not the best comment.

GENERAL: There has been clear coherence between learning outcomes, learning activities and examination.

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Mean | Standard Deviation
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4.2  | 0.7

GENERAL: There has been clear coherence between learning outcomes, learning activities and examination.

Mean | Standard Deviation
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4.1  | 0.6
Comment

Absolutely

Learning activities like the last fieldtrip would make more sense placed before the examination.
I think it will be more coherent to do the exam last.
Sometimes modules carried by lecturers overlapped each other.

GENERAL: My impression is that the teachers have been engaged and helpful, and that they have provided relevant feedback during the course when suggestions and ideas have been brought forward on its structure and content.

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Comment

All teachers were very helpful.
It was clearly visible that the teachers wanted us to understand the topics and encouraged us to ask questions and discuss.
Teachers were amazing, but not very engaged with each other, they should discuss more about what they teach in lectures. cause some information repeats and some not covered sometimes enough.
**GENERAL: Was your basic knowledge of the subject sufficient for the course?**

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**Comment**
- It was and I had the chance to fill gaps and expand my knowledge.
- GEON05 definitely was necessary
- Somewhat lacking insights into climate modelling
- yes

**GENERAL: Overall positive criticism:**

- Really enjoyed the course, particularly the report and the flexibility to make your own topics, and of course the field trips
- Excursions, seminars, lectures, examination
- I learned a lot in this course and I had the feeling that I got a very good insight in the active research in this field which is really nice! So it is really nice that we worked with so many articles, that helps a lot to improve my own scientific view. The teachers were really engaged in the subject and were always open for discussion and questions. I also really liked the report and presentation, because you could choose a topic of your own interest and weren’t assigned to one. I also liked, that we had two weeks for the report so we could really get into the topic! And it was also nice to be able to get feedback on a first draft.
- Lots of subjects were covered
- Many exercises to make the topic clearer
- The fieldtrips were really nice and the teachers were engaged and helpful, the short seminars where we’ve read articles and presented them was good as well.
- It is nice to see the information come together in the end of the course.
- Variety of subjects covered within the course, interplay between lectures, seminars and field trips worked well, independent project work, and especially Dalarna field trip.
- Field trips help us understand better theory about glaciation or other related topic.
- In the course we discuss very interesting topics with not always direct connection (like: Human involution, previous climatic changes, causes of warming.
- Seminars were really well carried and matching the scope of the course. The course was understandable and we could get a help we needed. I liked also the report writing and presentation.
GENERAL: Overall negative criticism:

The lectures on occasion overlapped a little too much perhaps, a little repetition is good and naturally there will be some overlap but when a lecture is spending 10-20 mins reintroducing something that has already been covered in a previous lecture the week before, the time could be better spent expanding the topic they are lecturing on. I think this was particularly the case with the way the lectures were structured covering climate change on a spatial and temporal scale. For example you might have the AMOC covered in a temporally focused lecture on a certain time period, then again in a spatially focused lecture on the Southern Atlantic by a different lecturer both talking about Tristan da Cunha.

Feedback, assessment

Sometimes I missed a little bit of a red threat, especially when we had a lot of changes between teachers in a short time. Then it didn’t really feel like the lectures built up on each other but sometimes was a little bit confusing.

The last few weeks of the course the workload was really big with the home exam, the report and the presentation. A break would have been nice between home exam and report so you don’t have to go from writing the home exam straight into working on the report. That was a little bit much.

At least one free day between presentation and going on the field trip with Sven would have been good to be able to prepare properly and have a short breather, especially because the presentations took very long and you didn’t have time to prepare for the field trip before because you were focused on the report and presentation

- Very busy schedule, I would say for example 4 seminars is too busy.

The structure of the course could be changed, having the exam last maybe the big excursion quite early on

Order of lectures sometimes confusing, try to hold thematically related lectures in a row (e.g. Helena's and Sven's lectures). Individual report to be placed preferably before the home exam. At least one spare day between presentations and last field trip necessary.

last field trip should be maybe earlier than exam or report writing.

examination was intense and straight after you must start intense report writing.

maybe writing should be first or last.

also during last field trip we learn about thing what was more helpful in before exam.

this climate change and global warming can be useful to have field trips Earlier than summer first week. it was worm and really small amount of snow.

I feel like the course was a little bit overloaded with different activities what was quite exhausting.

GENERAL: What would you suggest us to change?

Perhaps a shift in the weighting of credits towards the report and presentations as this was really valuable practice for the thesis and involved more thinking outside the box and application of knowledge than answering exam questions, but that is just an opinion.

Due to time limitations, additions may imply cuts and since I liked the structure of the course, I cannot think of any changes at the moment.

Maybe it is possible to change something in the order of the last few days, for example have one week of lectures between home exam and report.

Fieldtrip earlier, one seminar less

Previous comment

The examination should be left last. Make the last excursion first, followed by the report and then the final exam. Having the lectures of similar topics as a block and not separated.

As stated above: First project report then the exam afterwards at least one day free to pack up for the field trip (otherwise pretty stressful)

as I mentioned before the order of EXAMINATION- REPORT WRITING- FIELDTRIP

Maybe one seminar less? The number of questions on the home exam was a bit too big for the time we've had. Unlike the report where the time was perfectly limited. And please, add more computer-based exercises.
GENERAL: Was the information on Live@Lund useful? How can it be improved? We will change to a new learning platform next year.

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**Mean** 4.3  **Standard Deviation** 0.5

Comment

- They were useful and generally worked well.
- Sometimes it looks disorganised.
- Sometimes not all the lectures were available.
- Maybe use a uniform labeling of the lecture slides to make identification easier (e.g. LectureX-Lecturer-Topic).
- The best-organised live@lund folder I've seen.
LITERATURE: Was the text book appropriate for the course?

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Mean: 4.2  
Standard Deviation: 0.7

Comment
The textbook was very good.  
Lots of information but mostly necessary for the home exam  
Did not get to use it much because of the amount of articles we already had  
Good textbook!  
Some parts had to be supplied with other literature

LITERATURE: Was the additional literature (list of articles) appropriate for the course?

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Comment
The additional literature was very interesting and relevant.
They were quite hard but it was good to be exposed to harder text.
Yes but quite a lot of articles to cover them in detail.

Sometimes
The reading list was vast, however, there was not enough time to go through all of the papers.

LITERATURE: Were the lecture hand-outs useful?

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Comment
Yes, nevertheless in very few cases, I wish slides were a bit more explanatory.
Sometimes a little bit more text on the slides would be helpful.
Not necessary.

Yes, but sometimes not clear.
They were useful, though sometimes there was too much of them.
EXERCISES: General comments on the two sessions on "Reconstruction of climate change - examples from the literature" (Dan)

- Nice introduction to the breadth of the application of climate reconstruction
- Very good exercises. A really good challenge that we could get our hands on data and make our own interpretations.
- That was really nice, I liked it a lot and it was very interesting. It also helped me to get along better with articles.
- Good
- It was a good exercise
- Very helpful to get insight into research topics covered in literature. More of it welcome! Maybe try to include more very recent articles
- It’s REALLY HELPS TO ANALYSE FASTER DIFFICULT ARTICLES, or just understand better
- That was a really nice exercise!

LECTURES: General comments on Dan's lectures

- Amazing. Really nice to attend the lectures. Very good flow.
- Nice structure and the lectures on human evolution were very interesting
- Structured, good to follow
- Informative and good as well as interactional
- Good lectures
- In general very good and understandable. Especially liked excursion to human evolution (would keep that), some repetition regarding stable isotopes to GEON04

LECTURES: General comments on Raimund's lectures

- Very nicely composed slides covering all the relevant aspects.
- It was a little bit of repetition because we had a few of his topics already in other courses but it helped to understand those topics better
- Interesting
- Informative and good
- Good and interesting
- Very interesting subject! Sometimes repetitive to previous courses (the solar part), but not necessarily bad with this topic

LECTURES: General comments on Sven's lectures

- Amazing lectures with allot of material, space for discussion and nicely pointing important aspects of the subject.
- Very nice structure and descriptive.
- Sometimes more text on the slides would be helpful for me
- Good to follow, quite dense
- Informative and good, and interactional
- Good and understandable
- Nice insight into glaciations in other parts of the world. First lecture was a bit detached mainly due to the schedule. Also try to keep it closer to Helena's lectures
- Nice, that we had them in a bloc.

LECTURES: General comments on Helena's lectures

- Nice interactive and well explained lectures.
- The voting was very cool and helped to keep up the attention. The explanations on osl dating were really good.
- Sometimes I felt that the red threat was missing
- Well structured
- Pedagogic a and informative, very good
- It was nice to have the interactive questions
- Same as for Sven. Otherwise good lecture layout. Liked the implementation of interactive questions and little exercises!
LECTURES: General comments on Kalle's lectures

Very good lectures, with specific case studies and a lot of space for questions and discussion.  
Good slides and nice structure  
Good structure  
Good, a bit scattered  
Good

Only attended the southern hemisphere lecture. Thematically connected to Mats lecture about Southern Hemisphere. Maybe try to connect the information of these two lectures.

LECTURES: General comments on Mats's lectures

Well explained and nicely given lectures. Really enjoyed them.  
Good structure and nice slides.  
Good to follow  
Good and informative  
Nice lectures

Same as for Kalle. Baltic Sea History repetitive to GEON04, but overall very well explained and presented.

LECTURES: General comments on Jesper's lecture

Very interesting topic, well explained lectures and good space for questions and discussion.  
Didn’t attend  
Interesting, needed more time  
Good and informative  
Interesting

Interesting insight into this applied topic. Also interactive teaching style!

SEMINARS: Was seminar 1 " Palaeoclimate research task" (Dan) a useful learning activity?

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Total 6 (100.0%)

4.5 0.5
Comment

Very good seminar. The best was the chance to use actual data. With all the data it is quite chaotic in the beginning, although fun to combine the different proxies. It shows nicely what we learned in the master already.

I liked that very much, it showed how much we’ve go from the first rea
Interesting approach to work with unknown data but a bit confusing to make sense of it without knowing the location

SEMINARS: Was seminar 2 "Weichselian stratigraphy research task" (Helena) a useful learning activity?

<table>
<thead>
<tr>
<th>Number of Responses</th>
<th>Total</th>
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<tbody>
<tr>
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<td>8 (100.0%)</td>
<td>8 (100.0%)</td>
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</tbody>
</table>

Mean 5.0
Standard Deviation 0.0

Comment

Another very good seminar. Maybe individual feedback on the logs would make the activity even more constructive.

Good discussion helpful

Very good!

Good for freshening up sedimentology knowledge of GEON05! Nice to have it in a semi-formal context
SEMINARS: Was seminar 3 "Global change case studies" (Mats, Jesper) a useful learning activity?

<table>
<thead>
<tr>
<th>Number of Responses</th>
<th>0 (0.0%)</th>
<th>2 (22.2%)</th>
<th>3 (33.3%)</th>
<th>4 (44.4%)</th>
<th>Total (100.0%)</th>
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</thead>
</table>

Mean: 4.2, Standard Deviation: 0.8

Comment:
- Very interesting articles. We had the chance to focus on more complicated articles with challenging methodology behind.
- Do it before Easter break
- Overall good idea and interesting articles. However, shifted work into the Easter break, which would be better to have free for general revising very difficult articles or just not equal level.

SEMINARS: Was seminar 4 "Palaeoclimate reconstruction from glaciers" (Sven) a useful learning activity?

<table>
<thead>
<tr>
<th>Number of Responses</th>
<th>0 (0.0%)</th>
<th>1 (11.1%)</th>
<th>4 (44.4%)</th>
<th>Total (100.0%)</th>
</tr>
</thead>
</table>

Mean: 4.2, Standard Deviation: 0.8

Comment:
- Very interesting articles. We had the chance to focus on more complicated articles with challenging methodology behind.
- Do it before Easter break
- Overall good idea and interesting articles. However, shifted work into the Easter break, which would be better to have free for general revising very difficult articles or just not equal level.
SEMINARS: Was seminar 4 "Palaeoclimate reconstruction from glaciers" (Sven) a useful learning activity?

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>4.3</td>
<td>0.7</td>
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</table>

Comment

Another amazing seminar. It is really nice to use data and attempt to do actual reconstructions.
Interesting, would like to have a structured groups beforehand
everything new for me. other have much more experience. so I am glad they help me understand better, because articles wasn't very clear for me.

EXCURSIONS: Was the field trip in Skåne with Helena a useful learning activity?

<table>
<thead>
<tr>
<th>EXCURSIONS: Was the field trip in Skåne with Helena a useful learning activity?</th>
<th>Number of Responses</th>
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<td>7 (77.8%)</td>
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<tr>
<td>Total</td>
<td>9 (100.0%)</td>
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<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>4.8</td>
<td>0.4</td>
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</table>

Comment

Really enjoyed the trip and was nice to learn more about the local area.
Nice field trip. Warm up for excursion 3. Covers S. Sweden in good detail.
Yes learned more about the Skånes glacial history
Yes, very nice for regional overview of landscape development and deglaciation
very useful . I learn so much
EXCURSIONS: Was the field trip in Denmark with Helena a useful learning activity?

<table>
<thead>
<tr>
<th>Number of Responses</th>
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<tbody>
<tr>
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<td>0 (0.0%)</td>
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<tr>
<td>1 (11.1%)</td>
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<td>8 (88.9%)</td>
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<td>Total</td>
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<td>9 (100.0%)</td>
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EXCURSIONS: Was the field trip through Sweden with Sven a useful learning activity?

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</table>

Comment

Very good. Had the chance to understand better the sedimentological aspect of the subject especially regarding the Baltic region.

Very interesting

very useful, especially when my answers to Helena question was right, or she accept my thoughts, questions, we had discussion

It’s just a thought, but maybe it would be a good idea to show the stuff from Skane trip during Dalarna trip and spare one day for
### EXCURSIONS: Was the field trip through Sweden with Sven a useful learning activity?

<table>
<thead>
<tr>
<th>Comment</th>
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<tbody>
<tr>
<td>Super trip! Perhaps having longer in Idre and loosing a day of the pre-Idre part of the trip would be nice?</td>
</tr>
<tr>
<td>It was a really good learning activity with some very exciting moments and provided important field evidence of the past glaciations and their dynamics regarding sediments and landforms.</td>
</tr>
<tr>
<td>Learned a lot, definitely useful, placed before the exam</td>
</tr>
<tr>
<td>Can be placed earlier in the course</td>
</tr>
<tr>
<td>Definitely by the interactive way of the field trip, by the topics covered, the scientific approaches and the region! Maybe one or two additional days for individual or group based working on geomorphology or sedimentology with discussions afterwards. Very good to first do fieldwork and afterwards discuss the research history of the area very useful, give different overview about Glacial activity. And this trip show me how important to see glacier before analyzing glaciation processes, geomorphology.</td>
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<thead>
<tr>
<th>WRITTEN REPORT: Is this a useful and relevant part of the course?</th>
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<tbody>
<tr>
<td><strong>Number of Responses</strong></td>
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<td><strong>Total</strong> 9 (100.0%)</td>
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<thead>
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<tr>
<td>4.7</td>
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<table>
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<tr>
<th>Comment</th>
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<tbody>
<tr>
<td>Thought the report exercise was really valuable for research practice and report writing, it was nice to have the support of a supervisor along the way too, to replicate writing a thesis</td>
</tr>
<tr>
<td>It was really nice that we had the chance to select from different topics. All of the topics were relevant and interesting.</td>
</tr>
<tr>
<td>Liked that choosing your own topic was possible. Learned a lot of other reports as well.</td>
</tr>
<tr>
<td>Yes very nice to familiarize with a specific topic. Few days more time would have resulted in a better researched report. Topic assignments was a bit chaotic, maybe introduce a more formal way of choosing topics instead of first come, first serve.</td>
</tr>
<tr>
<td>I learn many things. but it was really intense and brain was overheated. of course I would like to improve my mistakes, i know what I did wrong. This intense writing important, but maybe not after intense exam. meeting with supervisors also very important.</td>
</tr>
<tr>
<td>That was very interesting and I really like the idea of supervisors.</td>
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EXAMINATION: Comments on the home-based exam:

The exam was fine, I have never been a massive fan of exams (I don't think anyone is) but having a home exam is definitely preferable to a timed, in-class exam. See above comments on credit weighting with the report.

The home based exam was a good opportunity to understand, clear up, formulate, and think about the most important aspects of the covered material.

Very busy, I would have liked to have 1 or 2 more days. Basically 12 hours a day non stop work.

Quite a lot, could be placed at the end of the course.

It is very demanding, maybe too many questions.

Fair and covering all topics. Quite a lot of writing work to do though for the assigned three days.

It would be nice to have more days for answering. It was hard to decide what I should prepare before I get questions. AND BECAUSE WE HAD ONLY LIST OF ARTICLES, sometimes it was hard to connect question and source from literature/articles. Of course specific question with reference was clear.

A little bit too many questions and too little time.

TRANSFERABLE SKILLS: Did the course increase your ability to critically assess, summarize, and discuss scientific articles?

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<td>5.0</td>
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Comment

It did. It remains to some extent challenging though to overcome language and methodological barriers of more demanding articles/researches. I've read a lot of them. Most of the seminars had this character.
TRANSFERABLE SKILLS: Did you get appropriate training in, and feedback on, written communication in English?

<table>
<thead>
<tr>
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<td>Total</td>
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Mean | Standard Deviation
---|---
4.3 | 0.5

Comment
To the greatest extent, yes.

TRANSFERABLE SKILLS: Did you get appropriate training in, and feedback on, oral communication in English?

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<td>Total</td>
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Mean | Standard Deviation
---|---
4.0 | 0.9
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<tr>
<th>Comment</th>
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<tbody>
<tr>
<td>I did but I would expect a bit more as in my opinion I need to get much better.</td>
</tr>
<tr>
<td>I didn't get feedback on my oral communication but i think i improved it throughout the course</td>
</tr>
<tr>
<td>During the feedback session</td>
</tr>
<tr>
<td>nobody really care about my communication in English. Teachers just ignore my mistakes and didn't fix. Everybody was really polite.</td>
</tr>
<tr>
<td>Sometimes is bad when you want to improve your English. Only basic rules I got for [e.g.] presentation, as everybody had.</td>
</tr>
</tbody>
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