

Course analysis

Course name and course code: Advanced Organic Chemistry, KD2310	When the course was conducted: HT 2022, Period 1
Course coordinator: Markus Kärkäs (course coordinator, examiner, lecturer, teaching assistant, seminar leader)	Other teachers in the course: Peter Dinér (lecturer, seminar leader) Helena Lundberg (lecturer, teaching assistant) Fredrik Schaufelberger (teaching assistant)
Number of registered students: 35 officially	Degree of examination after the 1st examination occasion: 17 A–E of 25 in total = 68% of the students that wrote the exam
<p>Explain how the students' views on the course have been obtained (course evaluation form, course evaluation board, other), as well as main views from the students:</p> <p>The students' views were obtained through a course survey that was divided into two parts, consisting of one part that contained questions from the LEQ and another part containing more course-specific questions. 34% of the students (12 of 35) responded to the survey.</p> <p>2022: Overall, the LEQ-evaluation indicates that the students are (really) satisfied with the structure and organization of the course. Of all the questions in the LEQ, the question that scores the lowest (1.83) relates to “I was able to learn in a way suited me” (Question 11). It is not entirely clear why the students express this opinion/feeling. Perhaps this could be related to the fact that some students are enrolled in multiple time-consuming courses at the same time?</p> <p>From the course-specific evaluation, it can be seen that the students appreciate the pre-recorded videos as this makes it possible to watch the videos when the students want/have time or even multiple times. Also, the students really appreciate the hand-in questions that are connected to each workshop/exercise.</p> <p>In general, the students' perception and experience of the course is (very) positive.</p> <p>2021: Overall, the LEQ-evaluation indicates that the students are satisfied with the layout of the course. From the LEQ evaluation, it can mainly be seen that the questions that result in lower scores come from questions that relate to “The intended learning outcomes helped me to understand what I was expected to achieve” (Question 1), “I regularly spent time to reflect on what I learned” (Question 3) and “I was able to learn from concrete examples that I could relate to” (Question 13). The lower scores of Questions 3 and 13 can perhaps be explained by the fact that the course does not contain a laboratory part where the students, for example, receive continuous feedback from the lab assistants regarding laboratory journals and laboratory reports.</p>	

In the course-specific evaluation there was nothing that stood out in the evaluation. One can note that the students appreciate the pre-recorded videos as this makes it possible to watch the videos when the students want / have time and several times over. As usual, one can note that the students only prepare a little for the lectures and that few students continuously read the course literature.

In general, the students' perception and experience of the course is (very) positive.

Describe how the course has developed from the previous course offering:

2022: Gratifyingly, all lectures could be given at Campus this year. Although it was decided that all lectures would be given at Campus, the pre-recorded lectures were preserved so that the students that were not able to physically attend the lectures could still follow the course by watching the videos. We are also aware of the fact that the students appreciate watching the videos as this enables the students to understand key concepts that can be difficult to swiftly comprehend.

Because a significant amount of the students have questions related to the “Green Chemistry project”, the lecture concerning “Green Chemistry” was not given as a traditional lecture. Instead, this lecture was given as a two-hour “question session” in which the course coordinator discussed how the students could structure their project presentations, showed examples of previous student presentations, and responded to questions that the students had encountered.

For the workshops/exercises, a minor modification was made regarding the structure/setup. This year, the first half of each workshop/exercise was student-centered, i.e. the students were divided into groups and focused on solving/discussing the problems while the teaching assistants assisted the various groups. The second half focused on solving the problems on the whiteboard; however, for this year the teaching assistants were responsible for this part of the workshops/exercises. During previous years, the student groups have been responsible for solving and explaining the solutions by the whiteboard. Thus, the minor alteration that was implemented for this year was intended to relieve the additional stress that some students might experience when speaking publicly in front of a crowd/audience.

2021: Fredrik Schaufelberger (newly appointed Assistant Professor at the Division of Organic Chemistry) was introduced as a new teaching assistant. Thus, the exercises/workshops were shared between Markus Kärkäs, Helena Lundberg and Fredrik Schaufelberger. Due to covid-19, the lectures were given as pre-recorded videos while the exercises/workshops were given at the campus. As a complement to the lectures, question sessions were given through Zoom. However, the attendance for these question sessions were rather low with approximately merely 10 students showing up.

For the exercises/workshops, the hand-in questions were kept at 2 hand-in questions per exercise/workshop. The main reason being that the students would, hopefully, study more before the exam, i.e. continuous examination. The students' answers to the hand-in questions were collected through Canvas (by creation of “Assignments”), enabling the students to directly see the teachers' corrections and obtaining feedback.

Comments from other teachers:

Peter Dinér, Helena Lundberg and Fredrik Schaufelberger have read and commented the course analysis.

Suggestions for changes to the next course offering:

2022:

- Schedule the question session/lecture on the Green Chemistry project even later in the course. By changing the order of some of the lectures it should be possible to have the question session/lecture on

the Green Chemistry later in the course – without affecting the coordination between the other lectures and the workshops/exercises.

- Try making a course summary (similar to those made for KD1230 and KD1270, and that the students are recommended to go through in the beginning of the course KD2310) that summarizes central/important concepts and reactions covered during the course. This can either be given as a “refresher lecture” after the normal lectures and/or as background material for the master course "CE2385 Selective organic synthesis".

2021:

- Schedule the question session on the Green Chemistry project a bit later in the course. Hopefully, this will enable more students to have started working on the project before the question session takes place.

Does this course have intended learning outcomes within the field of environment and sustainable development?

JA. Green chemistry (Sustainable chemistry) is the focus of one of the lectures (usually given by an external lecturer) and in the project part of the course (see below).

In such cases, how are these examined?

In the project part of the course (PRO1, 1.5 credits), the students are divided into groups and are supposed to analyze how “green” (sustainable) the syntheses of various drug substances are with regard to E-values, health risks, and energy efficiency. The results of their analysis are presented orally at a half-class seminar.

Other

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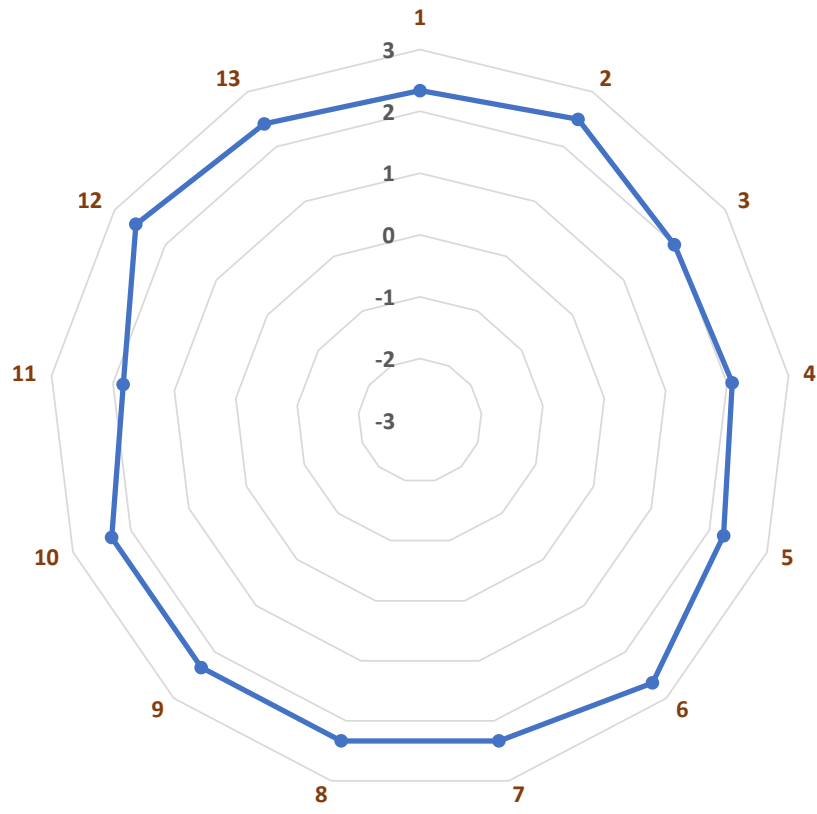
Course evaluation

Learning experience questionnaire (LEQ)

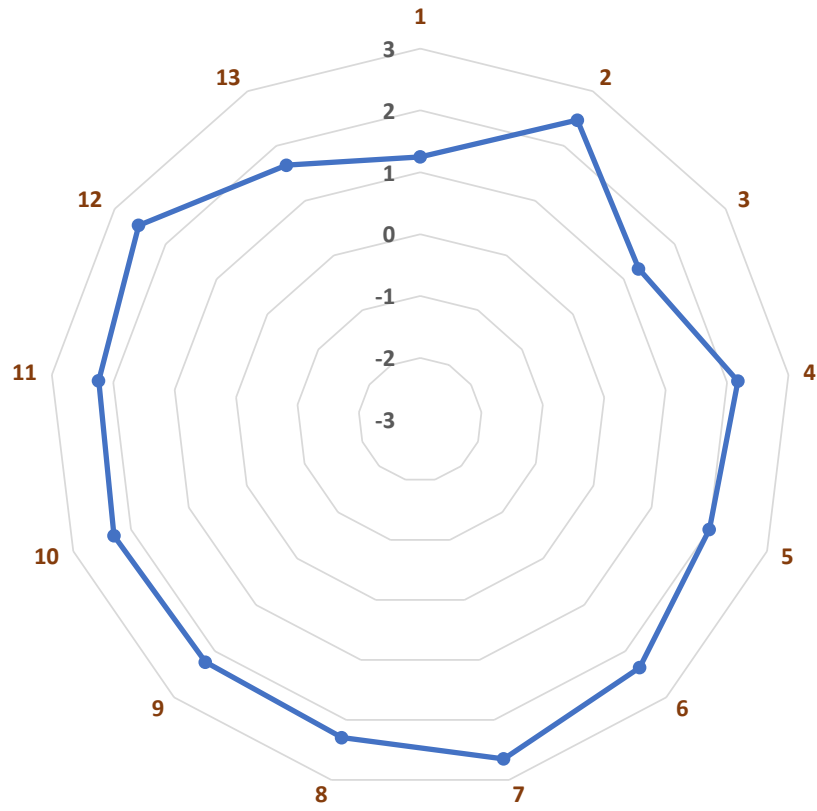
(Scale: -3: completely disagree with the statement... 0: neutral to the statement... +3: completely agree with the statement)

- 1** The intended learning outcomes helped me to understand what I was expected to achieve
- 2** I worked with interesting and engaging issues
- 3** I regularly spent time to reflect on what I learned
- 4** My background knowledge was sufficient to follow the course
- 5** I received regular feedback that helped me to see my progress
- 6** The course was challenging in a stimulating way
- 7** I understood what the teachers were talking about
- 8** Understanding of key concepts had high priority
- 9** The course activities helped me to achieve the intended learning outcomes efficiently
- 10** I was able to learn by collaborating and discussing with others
- 11** I was able to learn in a way that suited me
- 12** I understood how the course was organized and what I was expected to do
- 13** I was able to learn from concrete examples that I could relate to

2022



2021



What was the best aspect of the course?

The course covered the interesting and useful topics in organic chemistry fields. Also, the teachers are supportive and helpful.

The exercise sessions were a great way to go over the material not discussed in detail during the lectures.

The course is well-prepared and organized.

Heavy but useful and essential knowledge packed in one course, that can elevate my level of organic chemistry in a short period of time.

The exercise sessions were very good, and I liked the structure they followed. The home assignments were also on a good level of difficulty and length to help learning.

Nil

The exercises were perfect as they allowed you to try out mechanisms and later get an answer that felt satisfying :)

1) Tutorials (workshop) sessions were very engaging, the profs were really approachable and their passion for organic chemistry is contagious!

No offence to my home university but the profs here are more willing to help students / share tips & tricks and this has helped me to truly appreciate organic chemistry.

As a result, I have understood organic chemistry at a deeper level than I did back in my home university (org chem should not be brute-force memorised, instead to understand how the mechanisms work and apply them in specific scenarios)

2) Loved the fact that all the lectures were pre-recorded and I could just watch them from the comfort of my room

3) Bonus point system made me feel less afraid that I would fail and encourages students to engage with the exercise content

At the end of lectures, there were list of topics you needed to know.

What would you suggest to improve?

The lecture about green chemistry can be put in the middle of the course schedule, instead of in the beginning of the course schedule, so students can have enough time to study and work for the project. Therefore, the students can have more questions during the lecture.

Due to the difficulty of the course, I think before each exercise class, the lecturer can have a brief review of what we learned in the previous class.

Doing the report takes excess amount of time though

I do miss having organic chemistry labs, but I understand if there is no room for it in the schedule.

Nil

I would like for one of the bonus points to be about radical chemistry as I felt that it was hard to grasp. Moreover, the radical chemistry part of the course could be improved with more examples as it still is 1/9 th of the final exam

Slightly longer tutorial (workshop) sessions as half of the time the not all the green tutorial questions were gone through (time constraints)

Apart from that in my opinion, the course has been designed to be as optimum as it should be

What advice would you like to give to future participants?

Practice makes perfect!

Give your effort, it's worth it!

There is a lot of different material in the course, you might have to start studying for the exam even before the exam period.

Nil

Go on all exercises they are really good!

Study/revise a few weeks in advance for exams because the sheer volume of course content is daunting!

Is there anything else you would like to add?

Thank you for the interesting course.

Thanks to all the professors!

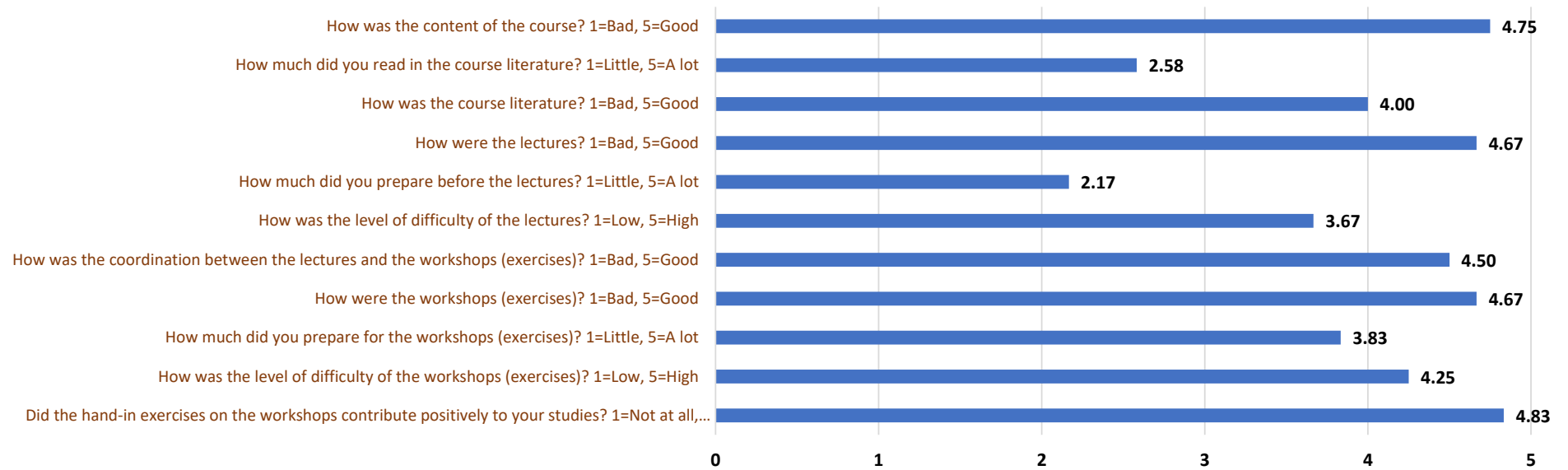
Nil

Overall a fun and academically stimulating course!

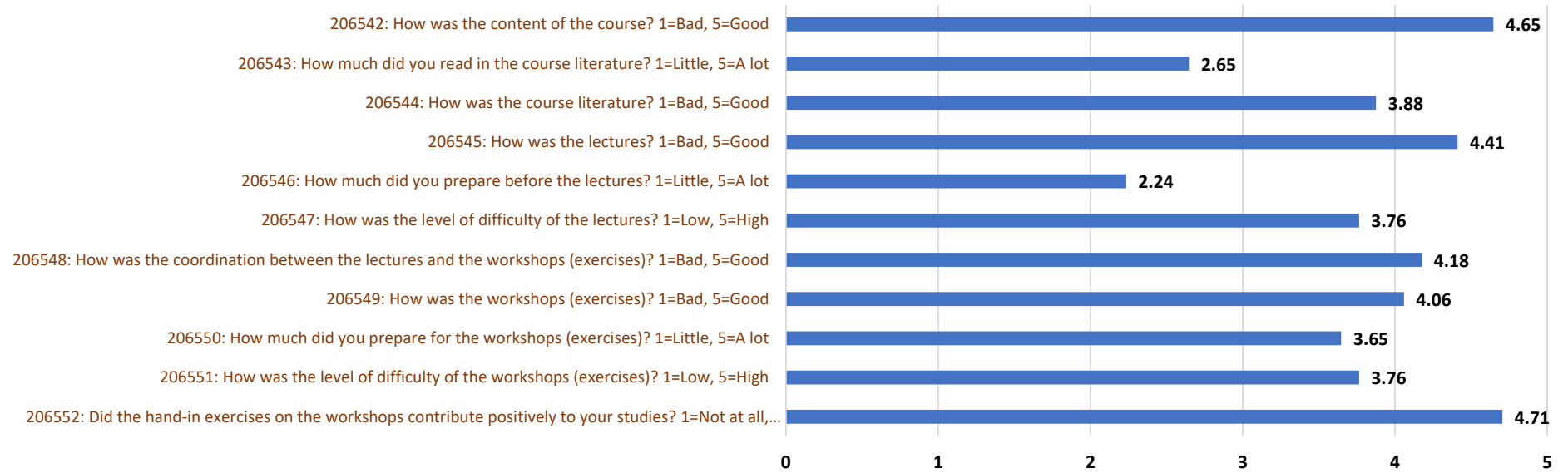
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Course specific evaluation

2022



2021



Other comments and suggestions for improvement of the course are welcomed!

Lectures

None

Maybe explain a little more?

Good lecturers with knowledge in their fields!

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Other comments and suggestions for improvement of the course are welcomed!

Workshops (Exercises)

None

It takes more time and effort than expected, I would want to have step-by-step guidance on solving methods

They were almost perfect but would have liked more problems that related to radical chemistry

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Other comments and suggestions for improvement of the course are welcomed!
Green Chemistry Project

None

I think most of the groups did this, but each group should present at least one suggested greener synthesis pathway for their product.

It takes excess amount of time before exam period

Some sort of introduction to green chemistry might be nice. We know about it since before, but some more advanced knowledge on the topic could be interesting if there is any.

Not that I know

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Other comments and suggestions for improvement of the course are welcomed!
Anything else

None

Thanks for the lectures

Fun course!

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