



## Course analysis

<b>Course code:</b> CK2310	<b>Credits:</b> 7.5 credits
<b>Course name:</b> Advanced Organic Chemistry	
<b>The course is part of the following program(s):</b> Molecular science and engineering (TMVVM), Conditionally Elective Macromolecular materials (TMMMM), Recommended Industrial and environmental biotechnology (TIMBM), track ENZT, Recommended	
<b>Semester:</b> HT2023	<b>Study period:</b> Period 1
<b>Course coordinator:</b> Markus Kärkäs (course coordinator, examiner, lecturer, teaching assistant, seminar leader)	<b>Examiner:</b> Markus Kärkäs (course coordinator, examiner, lecturer, teaching assistant, seminar leader)
<b>Number of first-time registered students:</b> 26 + 1 freestanding course student	<b>Response rate to the course evaluation:</b> 35%
<b>Number of first-time registered students who passed all sections/modules of the course:</b> <i>All sections:</i> 15 A–E of 22 in total = 68% of the students that wrote the exam <i>TEN1:</i> 15 of 22 = 68% of the students that wrote the exam (see below for distribution of grades) A: 4 students B: 2 students C: 5 students D: 4 students <i>PRO1:</i> 25 of 26 = 96%	
<b>Description of implemented changes for this course offering:</b> <b>2023:</b> 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. All pre-recorded lectures were available on Canvas from the start of the course.	

Andrey Shatskiy (postdoctoral researcher at the Division of Organic Chemistry) was introduced as a new teaching assistant. Thus, the exercises/workshops were shared between Markus Kärkäs (4), Fredrik Schaufelberger (3), Helena Lundberg (1), Peter Dinér (1) and Andrey Shatskiy (3).

**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.

#### **Summary of the students' course evaluations:**

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. 35% of the students (9 of 26) responded to the survey.

See the attached “Course evaluation” for details.

**2023:** Overall, the LEQ-evaluation indicates that the students are (really) satisfied with the structure and organization of the course. From the LEQ evaluation, it can mainly be seen that the questions that result in lower scores are from questions that relate to “I regularly spent time to reflect on what I learned” (Question 3), “My background knowledge was sufficient to follow the course” (Question 4) and “I understood what the teachers were talking about” (Question 7). The lower scores of Questions 4 and 7 can perhaps be explained by the fact that the international students do not have the same background knowledge compared to the students that studied at KTH during their bachelor studies.

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.

**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?

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.

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

### **Reflections on the implementation and results of the course**

a) Strengths of the course:

- Well-structured course
- Pedagogical and knowledgeable lecturers/teachers
- Engaging and helpful lecturers/teachers
- Lecturers/teachers with a desire to teach
- Pre-recorded lectures are available on Canvas

b) Development opportunities of the course: –

### **Proposed changes for the next course offering:**

#### **2023:**

- Strive to compile 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 CK2310). This summary would contain central/important concepts and reactions covered throughout the course.

#### **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".

### **Other remarks:**

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The course analysis must be made within one month after the end of the course.

***A compilation of the course evaluation, course questionnaires or meeting notes from course evaluation board meetings etc must be attached to the course analysis.***

The completed course analysis is sent to: teachersupport@cbh.kth.se

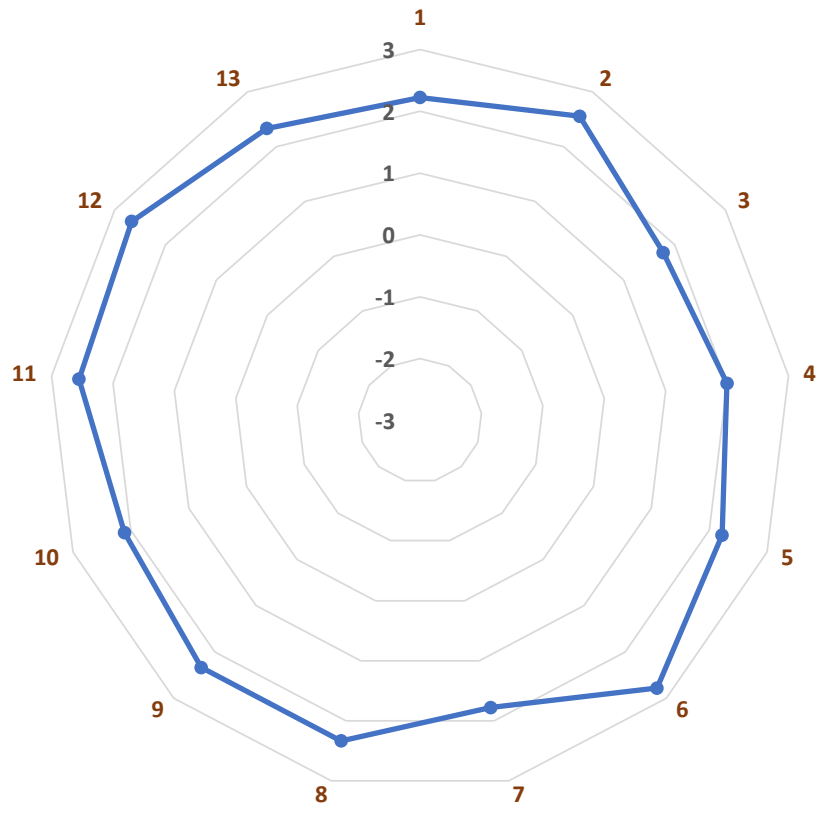
## Course evaluation

### Learning experience questionnaire (LEQ)

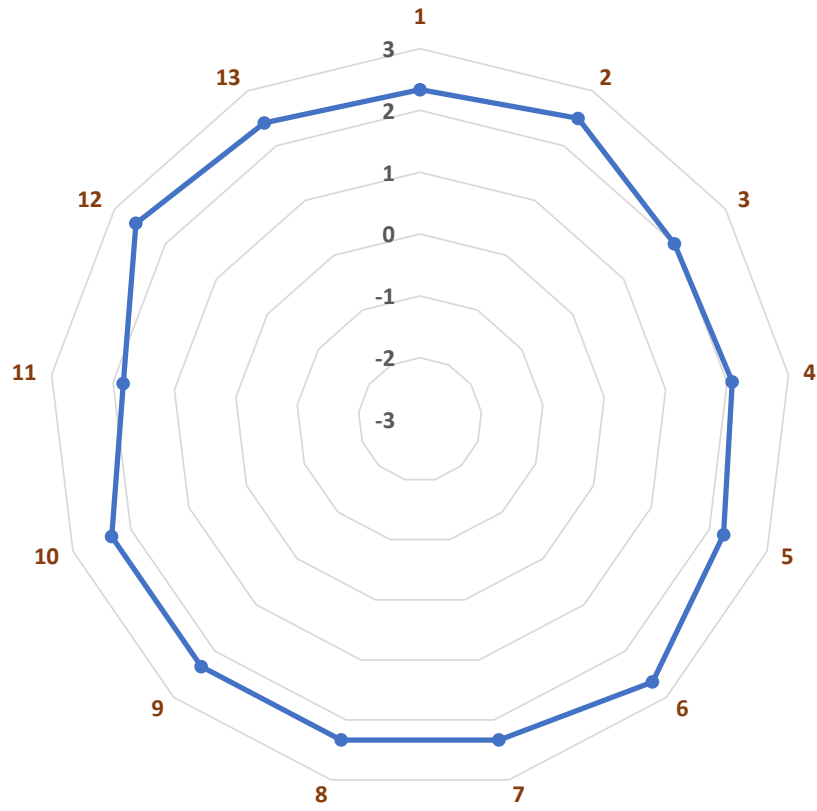
(Scale: -3: completely disagree with the statement... 0: neutral to the statement... +3: completely agree with the statement)

- 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

**2023**



**2022**



### What was the best aspect of the course?

Teachers, I enjoyed lectures and exercises. Lecturers were knowledgeable and during excersises everything was clearly explained

All teachers were very pedagogical, course had interesting content

Good and engaged teachers

The exercises had engaging assignments and had good guidance so you comprehended the different subjects in the course

Professors with a real desire to teach us their knowledge !

The best aspects of the course were exercise sessions and the pre-recorded video lectures.

The teachers were very kind and helpful, they answered any questions we had. They were also pretty good in explaining the organic chemistry concepts in a way that made it more understandable.

Plus point - recorded lectures for us to review any concepts that we were unsure of

I like that there were online lecture videos for us to refer to if we didn't understand the live lecture content

### What would you suggest to improve?

I don't have any suggestions. The course was engaging and enjoyable

In my opinion I feel that there was too many separate areas treated which made it more difficult to gain an overall understanding of the course content and how the areas were related to each other. So I would suggest narrowing down the spread and go deeper into fewer areas

More exercises could be good so one can spend more time understanding the concepts with the help of teachers. But not super necessary

Not entirely sure, maybe look over some of the exercise questions to have them be more relevant for the course and a few more exams from earlier years so that certain questions feel more in-line with the current course

Include lab practice

Having a few lab sessions might be helpful.

Perhaps reaction conditions and reagents could be included for more reactions in the lecture slides (with respect to the last exam question)

### What advice would you like to give to future participants?

Prepare thoroughly for the exam

Start with the green chemistry project well in good time, do all exercise problems and attend exercises (they were very helpful to gain understanding and teachers were very friendly and engaged)

As with any course, work regularly with problems and the study material throughout the course. The teachers are great help so ask if you have questions. It's a fun course so enjoy it!

To start early with memorizing different species seen through the course and to memorize all metal-catalyze cycles early

Working in a group! It helps a lot.

Try to study more references than only lectures. For instance the book or watch more videos on YouTube.

Review the content regularly as there's a lot of reactions and mechanisms to memorise

Study hard and try to understand the mechanisms instead of simply memorising them



Is there anything else you would like to add?

Teachers were wonderful!

Superbra att ni lärare är så stöttande och verkligen är engagerade och vill att man ska lära sig. Och superbra att det finns så mycket material på canvas redan från kursstart så man kan lägga upp plagget i den takt man vill. Inspelade videos är superbra att ni har!

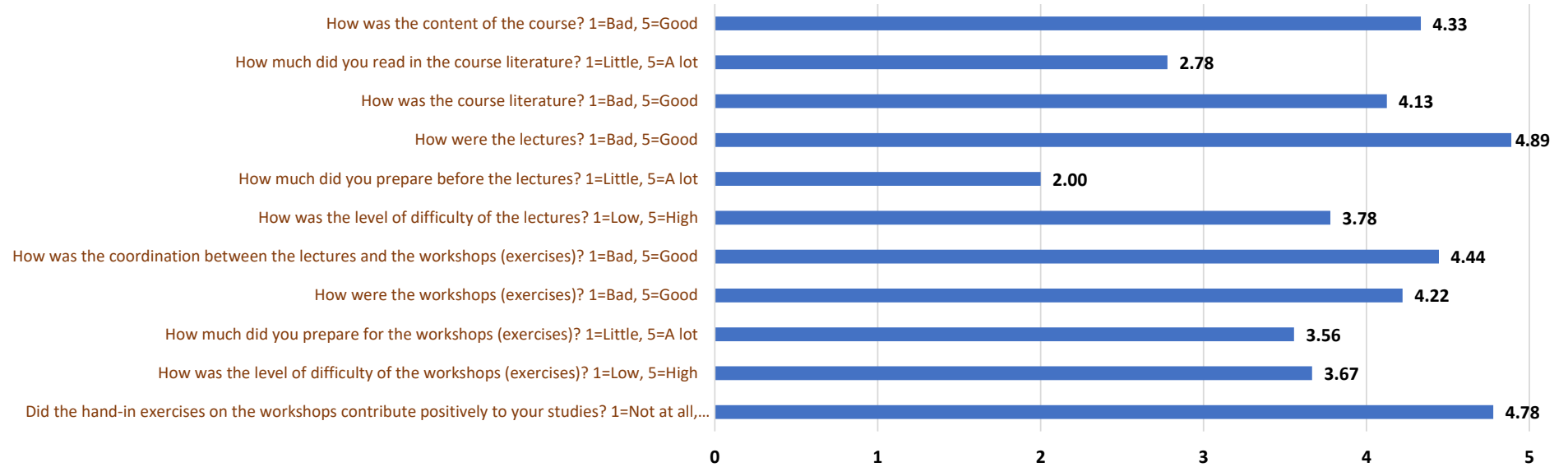
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This course was the most difficult but one of the best courses I have ever had. It was very well structured and engaging with very thoughtful and helpful lecturers.

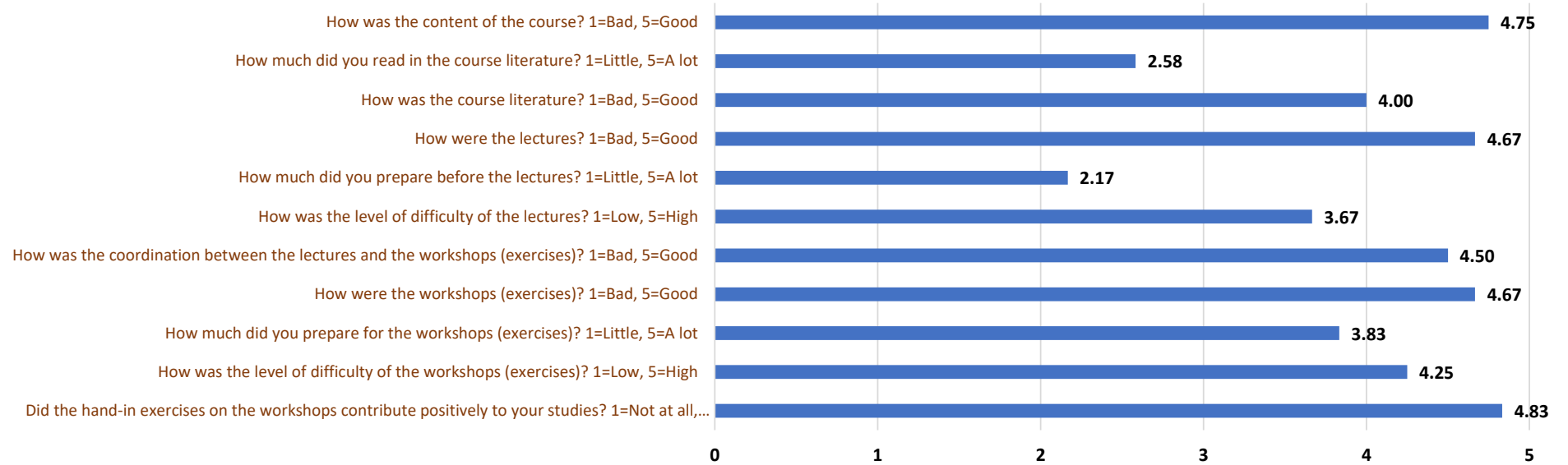
NA

## Course specific evaluation

2023



**2022**



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

**Lectures**

No. The course was very interesting. I enjoy the topics we learned

Maybe eventually make updated lecture videos if the content slightly changes

Course on green chemistry should be a bit more presented

NA

**Other comments and suggestions for improvement of the course are welcomed!**  
**Workshops (Exercises)**

I have no suggestions, the excercises were well structured.

I think it would be nice to have 1-2 exercises more so more time could be spent with the help of teachers

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I'd prefer for the profs to go through the exercise questions more thoroughly during the workshops, instead of allocating most of the time for group discussions

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

No

Presentations could be better in live and not by Zoom

NA

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

No. Overall the course was interesting, contact with profesors was also good

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NA