

# Course analysis AK2030, AK2036, AK2038 & AK2040 period 3 2020-2021

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## DESCRIPTION OF THE COURSE EVALUATION PROCESS

**Describe the course evaluation process. Describe how all students have been given the possibility to give their opinions on the course. Describe how aspects regarding gender, and disabled students are investigated.**

Students have been asked to fill out the LEQ through the central KTH system. This also investigates aspects regarding gender and disabled students. A 12 questions LEQ template was used without additional questions.

## DESCRIPTION OF MEETINGS WITH STUDENTS

**Describe which meetings that has been arranged with students during the course and after its completion.**

Students were invited to send representatives to the course analysis meeting. Student unions were also asked to send representatives.

## COURSE DESIGN

**Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.**

### General: differences between courses

AK2030 and AK2036 takes the same main lectures and seminars. AK2038 take the “Economic methodology” lecture instead of “Engineering design” and the “Philosophy of social science” seminar instead of the “Evidence, analysis and interpretation” seminar. AK2038 take the “Algorithmic reasoning and its limitations” lecture instead of “Engineering design”.

AK2036, AK2038 and AK2040 take a project part. For AK2036 and AK2038 students, this consists of three tasks where students work in groups with an article from their field. AK2040 take a project part where the for instance the nature of mathematical objects are discussed.

Given that these courses are similar, it is useful to discuss these evaluations together. No changes were made from period 1 or 2. See these analyses for further pandemic-related changes.

## THE STUDENTS' WORKLOAD

**Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If these is a significant deviation from the expected, what can be the reason?**

In general, students study less than the expected level. As has been discussed in previous analyses, there are many possible reasons for this, such as students putting in the effort only to pass the course or other courses requiring more time than they should. It could also be that students are making incorrect assessments of their time spent on the course. Some notable exceptions from the average,

where students reported spending more than 40 hours per week on the course, could be a further indication for this. Some might not realize or feel that many of the optional course activities are optional. The participants in the course analysis meeting considered that the amount of time reported was reasonable given these uncertainties. For the students from theoretical mathematics programme, taking AK2040, the other courses for the programme are given at a lower tempo, which in turn makes this course stressful. Discussions with the programme responsible regarding this was suggested.

## THE STUDENTS' RESULTS

**How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?**

	AK2030	AK2036	AK2038	AK2040	Grand Total	%
A	2	7		3	12	5%
B	5	11		2	18	8%
C	7	24	1	3	35	16%
D	23	64	3	8	98	45%
E	7	18	1	3	29	13%
F	3	16	2	1	22	10%
Fx	3		1	2	6	3%
<b>Grand Total</b>	<b>50</b>	<b>140</b>	<b>8</b>	<b>22</b>	<b>220</b>	

Passed: 87 %. 24 % of students in AK2030 & AK2036 submitted a part 3 that was not corrected since they got a lower grade on part 1 and 2 than C. There are differences in the grade distribution compared to one year ago, which is due to the exam being different in format. There are no particular differences in the grade distribution compared to last period these courses were offered – period 1 2020.

## STUDENTS' ANSWERS TO OPEN QUESTIONS

**What does students say in response to the open questions?**

While the video lectures receive praise, as in previous evaluations, several students note the need for on-campus learning. Flipped Classrooms, given previously before the pandemic, were such occasions, but they could be refined in format to feature more of independent reasoning and justification – which is then examined in part 3 of the exam. For Bonus Point-activities, it is good that they are available during a longer time, such as with video lectures.

More Q/A sessions during the course was suggested by some students.

Some students criticize the part 1 of the exam, a multiple-choice part. It was discussed during the meeting. There are advantages to it – testing a lot of material, and testing a certain kind of knowledge (equivalent to the first learning outcome). On the other hand, it often encourages rote learning, which is often considered more superficial.

The meeting discussed how to make more of the course specific to certain master programmes. Suggestions of including specific examples, such as chemistry examples for chemistry students, was suggested and discussed. While this is a good idea, one problem is that the philosophy teachers will not have a deep knowledge regarding these examples, and might not be able to help students understand. Another problem is that students have different backgrounds, even within the same master programme, and it can be hard to determine what examples work. Finally, one point made in the course is that methodology is shared between different fields of science. Working with examples from outside your field can help elucidate that.

For the theoretical mathematics masters programme, much of the content works well, but some does not. Much of theoretical mathematics does not involve methodological considerations of the same kind as in many other sciences. Some students, exchange students in particular, do not see themselves as engineers as much as students at KTH do in general. Bringing out the aspect of being a part of the scientific community could help. For instance, students in AK2040 could be asked to read scientific articles in the project part.

There were many positive comments about the seminars, however, some students noted that different teachers taught the seminars differently, where the written instructions diverged from the practices.

## **SUMMARY OF STUDENTS' OPINIONS**

**Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.**

Generally, have a favourable impression of the learning environment in this course. On this scale, zero equals an average of -3 and 7 equals on average +3, while 4 being neutral. Students taking AK2030 rate all aspects of the learning environment between 4,7-6,4 (15 responses). Students taking AK2036 rate all aspects of the learning environment between 5,3-6,1 (48 responses). Students taking AK2038 rate all aspects of the learning environment between 4,3-6 (4 responses). Students taking AK2040 rate all aspects of the learning environment between 4,0-6,8 (4 responses). None of these aspects of the learning environment stands out in particular for these courses, when controlling for the number of respondents for each course code.

## **OVERALL IMPRESSION**

**Summarize the teachers' overall impressions of the course offering in relation to students' results and their evaluation of the course, as well as in relation to the changes implemented since last course offering.**

The teachers' overall impression is that students, in general, appreciated the course.

The exam was discussed, both structure and content. Students could be offered more opportunities to practice for the part 3 of the exam.

## **ANALYSIS**

**Is it possible to identify stronger and weaker areas in the learning environment based on the information you have gathered during the evaluation and analysis process? What can the reason be?**

There is no aspect of the learning environment that sticks out in either direction, the courses taken as a whole. The general structure of the course is functioning well and fills its purpose. Improvements can be made to particular aspects, such as quizzes.

**Are there significant differences in experience between:**

**- students identifying as female/male?**

No particular interpretation was possible for any of the courses.

**- international/national students?**

Generally, international students had a less favourable view of the course than the Swedish students. However, since the number of respondents from each category is not known, no particular conclusion can be made.

**- students with/without disabilities?**

No particular interpretation was possible for any of the courses.

### **PRIORITIZED COURSE DEVELOPMENT**

**What aspects of the course should be developed primarily? How can these aspects be developed in short and long term?**

- Grading system will be further discussed and developed by the teachers.
- The seminar teachers will meet to ensure consistency in teaching.

The following questions were raised during the meeting, but no clear decision was made.

- How can we show the students that some parts of the course are optional?
- Can flipped classrooms be brought back in an improved format after the pandemic?
- Is it possible or advisable to move the TMAKM students to another period?
- Could JML be integrated into this course?
- Could subtitles be added to the videos? The videos are transcribed and added as a course material, could the transcription be added to the video?

### **OTHER INFORMATION**

**Is there anything else you would like to add?**