Course analysis SF2940, HT21, P1

Course analysis carried out by:
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Course analysis based on:
-Midterm survey created by kursnaemnd, LEQ course survey after regular exam.
-Course meeting under the course with student representatives representatives.
-Final course meeting with representatives.
-Regular online meetings with with teaching assistants.
-Results of regular exam.

All registered students were invited in week 2 of the course to actively take part in the kursnamnd. Only two students chose to do so.

Course design:
Due to SARS-CoV 2, the course was offered in a blended approach:

-Lectures were replaced by prerecorded videos. The videos were of varying length 20 to 45minutes, typically 4 to 6 videos per week. In addition for each week either an introductory video or a detailed description of the learning goals were published in Canvas.

-The course was organized by topics in `Modules' in Canvas.

-Exercises were offered in five groups, thereof four took place on campus and one was offered in addition online via zoom. For exercise groups on campus a preregistration in Canvas was mandatory in order to insure that the number of persons in a classroom were well balanced and was at any time less then 50.

-Weekly office hours on zoom, additional office hours before the exam (and the re-exam).

-Examination concept: Optional midterm exam in the form of time limited (1.5h) assignment administered in Canvas without zoom proctoring. Midterm gave up to 15% bonus for final grade. Written exam (4h) on campus, re-exam scheduled to be on campus depending on.

Course results after regular exam including Fx-completion:
-A: 20.7%
-B: 11.3%
-C: 11.3%
-D: 7.9%
-E: 16.7%
-F: 31.0%

Number of registered and re-registered students: 283. Students writing the regular exam: 203.

Summary of student's opinions:

-Average response to LEQ statements does not indicate significant problems with the course.
-Students emphasized the following: They work with interesting issues. The course is *very relevant* for their studies. The course was challenging with a considerable workload. The assessment was considered fair and honest. The bonussytem with time-limited assignment was highly appreciated, in particular under the SARS-CoV 2 situation. Students acknowledge the work of the teaching assistants and find the exercise sessions helpful. Students appreciate that the course literature is available for free via KTH's library. Students appreciate the hard work done by teaching assistants.

-Related to the current situation students emphasized the following: The course was very well structured, content-wise but also in Canvas. In fact, students appear to appreciate the structure and setup used in Canvas, maybe it could serve a template for other courses. Many students seem to favor prerecorded video over live zoom lectures (`best part of the course', 'very good lectures'), yet there is also a minority who would appreciate both. An online exercise session was found a helpful complement to the on campus sessions.

-Due to the wide range of student's from AK3 and AK4, some students consider the course too difficult while others find the course is not to have the correct challenging mathematical level. This is also reflected in the reported workload of the students.

Summary of course meetings:

In addition to the above the following was pointed out by student representatives: The current form of teaching and learning activities was considered to be very helpful in the difficult situation, in particular the prerecorded videos are considered to be more helpful than live zoom lectures, e.g. they allow to pause and to rewind. The student representatives further noticed that with this course they reach a new level in their mathematical education, and find this stimulating in a good way. That the course focuses on theory rather than applications is considered to be good in view that students expect that applications will follow in their continuation of studies.

For further course development the student representatives suggest to focus on the exercise sessions. Proposed ideas include to maybe reduce the number of exercises solved in on sessions, create a more interactive learning environment, and give students some time to solve exercise sessions before presenting solutions, etc. In sum, find better ways for student activated learning. Key is finding ways that students come prepared to the exercise sessions (at least look at the problems that are going to be discussed). Whether it is really helpful (not to be confused with convenient!) to additionally publish solutions to the exercises done in class may be discussed.

Some students in AK3 reported that the exercise classes were very challenging for them, even if they prepared well. Some students in AK4 stated that the exercise sessions were `refreshing'. I therefore propose to include more worked examples in the lectures.

As soon as the situation will allow it, online exercise sessions should be suspended, however office hours via zoom appear to be effective and helpful.

Examiners assessment and recommendations:

I consider the course SF2940 to be an important course for students in CINEK-TMAI AK3 and students in TTMAM AK1. In addition the course is read by students in CTFYS, as well students from data and machin, plus a dozen of PhD students from other departments. The level and competencies of the students is thus very `wide' as indicated above. Some students indeed succeed very well (`Very fun course') while others are struggling considerably (`It is a difficult, heavy course').

This year we had again about 280 registered students similar to HT20. I expect that due to prevailing relevance of data science, AI, etc. and the popularity of these fields among students the number of students will continue to grow. With the CTMAT program coming to AK3 in HT22, I expect further 20-40 students.

For these reasons the examiner will contact SRs and PAs at the department with a request to initiate a dialogue on this course and our probability education in a broad sense.

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