Course analysis for EL2450 Hybrid and Embedded Control Systems

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Course information: https://www.kth.se/social/course/EL2450/

1 Teaching stuff

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2 Quantitative data on number of students

As can be seen from the course information webpage, the course is worth 7,5 credits. 5,5 credits are given for a passing grade in the exam (A,B,C,D,E,Fx,F scale) and 0,5 credits for each of the two first homework and 1 credit for the third homework (laboratory exercice)(P/F scale). The statistics are as follows:
Number of registered students: 70
Number of students that passed the course (exam and homework): 55* (*incl. students that passed the re-exam and previous years' students)

3 Student viewpoints

According to Covid-19 related regulations, most of the course work was done remotely this year. The lectures and exercises were pre-recorded and provided to the students before the scheduled sessions. During the real-time zoom sessions, we replayed the prerecording and had Q&A sessions. Homework 3, a laboratory exercise with a practical implementation on a robot, which was mandatory in previous years, was made optional this year for safety concerns. Feedback from the students was gathered during the last two lecture sessions through an anonymous evaluation questionnaire we designed in Google. We received feedback from more than one third of the registered students (24 out of 70 participated). This ratio was smaller compared to last year, which can be due to the pre-recordings and remote attendance of the course.

Nevertheless, we could derive some useful conclusions from the questionnaire. In general, both the exercises and the homework assignments received a lot of positive comments from the students. They praised how the exercises and homework were helpful in understanding the course and how they provide practical examples to work on. The exercise compendium and recordings were also welcomed among the students, although some complained that the pace of the live sessions was too fast and they have opted to watch the video offline. Some students pointed out that the suggested exercises are very different compared to those discussed in the exercise sessions and, to this regard, we have updated all the suggested exercises to have them better aligned. Some students also mentioned that it would be better to have the exercise sessions live instead of playing pre-recorded videos. This is not feasible given the time and resource constraints, but we aim to do so in the coming year.

Regarding the lectures, we received some critical comments. The content in some lectures seemed to be too theoretical for some of the students and they would prefer more application examples to the theory to understand during the lectures. Some students also complained about that the pace in the pre-recording videos is too fast for note-taking at the same time, and thatn it would cost too much time if one watches the videos beforehand and watches it again

live. This year we also provided several interactive Jupyter notebooks that illustrate and visualize some aspects in the course. These optional notebooks are intended for the students to check the numerical implementation of the theory and to experiment with. However, most of the students have not looked into these materials. Regarding the reading material, most students are positive and are satisfied with the provided study materials.

4 Planned developments

The main criticism is that the lectures contain too much theoretical material and lack practical examples for better understanding. Following the trend to have less math, I might loosen up some of the lectures and corresponding materials and add several illustrative examples. Another main criticism is about playing pre-recorded videos during online sessions, which is not most efficient and interactive way for teaching. I hope next year the lecture and exercise sessions will be in person with more interactions.

5 Other comments

As mentioned before, many students are not so engaged in attending live lecture/exercise sessions compared to previous years but choose to study offline. This could be problematic because discussions among peers are essential for them to think and learn.