

Report - EL2620 - 2023-03-08

Respondents: 1
Answer Count: 1
Answer Frequency: 100.00%

Please note that there is only one respondent to this form: the person that performs the course analysis.

Course analysis carried out by (name, e-mail):

Henrik Sandberg, hsan@kth.se

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.

A course evaluation board with one student member, the responsible teacher, and a postdoc was formed at the beginning of the course. Two feedback forms were sent to the students during the period to collect feedback about the course modules.

After the written exam, the standard course evaluation (LEQ-test) was sent out to all the students.

DESCRIPTION OF MEETINGS WITH STUDENTS

Describe which meetings that has been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)

The course evaluation board had a meeting after the exam and the course evaluation were completed.

COURSE DESIGN

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

The course treats control theory for nonlinear dynamic systems. The course consists of traditional lectures, exercises, math help sessions, homework assignments, and a written exam.

Implemented changes since the last offering:

1. A postdoc was engaged in some of the lectures and exercises.
 2. The bonus point system for homework was adjusted (9/10 points are now required, which is an increase).
 3. A mind map was used during the course to clarify connections between topics.
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THE STUDENTS' WORKLOAD

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

In the course evaluation, the average coursework is around 15 hours/week. Since the course is 7.5 credits, the expected workload is about 20 hours/week.

Most students thought the time they spent on the course was appropriate, but it appears a bit low. A reason could be that students did not read the course book material independently and that the homework could be more complex.

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?

The grade distribution after the written exam was:

A: 12 (29%)
B: 10 (24%)
C: 6 (15%)
D: 4 (10%)
E: 1 (2%)
Fx: 6 (15%)
F: 2 (5%)

The students with Fx complemented to grade E later today. The students succeeded very well on average. The passing rate is about the same as last year, but there are fewer grade A awarded this year. This is likely because it was harder to obtain bonus points on homework this year.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

Most students were pleased with the teaching and course material. It should be noted that only 11 out of 45 students answered the questionnaire.

Suggested improvements included changing the course book, more introduction to nonlinear systems, more treatment of limit cycles, and improvement of Homework 4.

SUMMARY OF STUDENTS' OPINIONS

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

Below follows feedback from the student representative:

Workload is appropriate. Compared to other courses I have taken in control, like MPC, Modelling of dynamic systems, and RL, the overall workload is lower.

Notable observations from LEQ-test:

In general, most questions get average scores higher than 6, showing that the overall impression of this course from students is good!

For some specific questions, the average scores are slightly lower than 6, I will list them in the following part and try to analyze the reason in the students' shoes.

Question 2 "I explored parts of the subject on my own (a)" got 5 points, and question 3 "I was able to learn by trying out my own ideas" got 5.8 points. The Possible reasons are the lecturer gave instructions in a detailed way, and the assignment was highly relevant to the course content. I would say this is not a bad thing because this enhances my study efficiency and makes those students without too much control background easier to follow. But if you want to teach in a more stimulating way in the future, one possible improvement could be designing more advanced problems that are slightly beyond the lecture (notes) in homework and giving (more) bonus points.

Question 5 "I felt togetherness with others on the course" got 5.8 points. One possible way to improve this is to split the group randomly for each group assignment. Especially for international students, this helps them to know their classmates better.

Question 15 "I could practice and receive feedback without being graded" got 5.8 points. From my side, I would say the lecturer and TAs are helpful and always willing to answer questions.

Question 16 "The assessment on the course was fair and honest" got 5.6 points, but I would say yes.

Question 18 "I regularly spent time to reflect on what I learned" got 5.8 points. I would say this course has encouraged students to reflect (some slides before each lecture to remind students of previous lectures, and a nice summary of course content). One possible improvement is to get feedback from students more frequently, for example, a short questionnaire after each chapter or each lecture will be good.

Question 20 "I had opportunities to influence the course activities" got 5.8. I am using this opportunity now... But we probably need to get more feedback from students and review those feedback more frequently.

There is no significant gender difference in LEQ test result.

The overall points given by international students are higher. (Probably because they have lower expectations and higher ambition compared to the locals)

Summary of general questions:

What was the best aspect of the course?

High-quality lecture notes (both whiteboard and online)

Quick review and recap of lecture

Useful homework

What would you suggest to improve?

More introductions to nonlinear systems in the first part.

Go more in-depth on some difficult topics like limit cycle

Changing course book, the book by Khalil is not friendly for beginners

Update the exercise solutions with more clear steps

State which exercises will be reviewed in advance.

Include an overview step-by-step on how to approach the problem generally

Improve Homework 4 with more step-by-step exercises

Review and update the lecture notes to add more clear steps

A short recap before exercise should be good

Not sure if the computer lab session is beneficial

Discrete-time nonlinear systems can also be included in this course since they are more commonly used in computer applications and are easier to relate with continuous nonlinear systems.

Comments on the final exam

Difficulties: easier compared to the other control courses like MPC RL... about half of the students submitted the exam in advance.

The first 4 problems are highly relevant to the course content, but the last one is more like tricky math rather than nonlinear control to me.

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 are pleased with the course and the students' engagement. A concern is that the estimated student workload is a bit low. Since there is plenty of material in the course already, it may not be appropriate to increase the amount of material but rather look into the assessment and grading of the present material.

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 for these be? Are there significant difference in experience between:

- students identifying as female and male?

- international and national students?

- students with or without disabilities?

The question with the least positive responses in the LEQ test was "I explored parts of the subject on my own". It received 5(7), which is better than neutral but not as high as most other questions. Probably this is because the course covers quite a lot of advanced material already.

There is no significant gender difference in the answers.

International students gave significantly higher scores on most questions than national students. The international students also performed (much) better on the written exam on average. A possible explanation is provided by the student representative above: International students have lower expectations and higher ambition than national students. Another reason may be that international students seem to have a stronger mathematics background.

No student with a disability answered the questions.

PRIORITIZED COURSE DEVELOPMENT

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

- Upgrade Homework 4 with more step-by-step exercises.

- Include more material on limit cycles.

- Update the exercise solutions.
