

Report - DD2410 - 2024-04-18

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):

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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.

The course has been evaluated with a questionnaire at the end, , and with discussions with groups of students in connection to the seminars in EL2220, as well as in their written comments. There were documented meetings with a course committee, with two student representatives.

The questionnaire 35 respondents, therefore it may not statistically relevant, but results can be used qualitatively.

The course was also commented in the general evaluation of the SCR Master program, for which it is primarily intended.

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.)

A course committee was formed with two student representatives. Meetings were held and documented during the course.

Meetings with students has also been via the EL2220 seminars, once per period, i.e. both during and after the course.

COURSE DESIGN

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

The course covers a broad spectrum of subtopics from the interdisciplinary field of robotics. Three teachers (Christian Smith, Petter Ögren, Patric Jensfelt) cover different topics in lectures and assignments. The larger part of students' learning efforts are spent in working with 4 smaller and one larger programming assignments, focusing on the different subtopics, ranging from kinematics to planning, navigation, task switching, and system design.

Parts of the theoretical knowledge is also examined in a smaller P/F type exam. The assignments all come with different subparts that cover the topics to different levels of advancement. The students can choose to only complete the basic parts for a passing grade, or choose a set of more advanced topics for higher grades.

The course is mainly intended as an introduction to the topic area for the first year students of the SCR Master's program, but is available to other students as well. Currently, more than half of the students are from other programs, with varying degrees of coverage of the recommended prerequisites. Some of these students find the course very challenging, as they may never have programmed before, are not familiar with linear algebra, or do not have knowledge of the basic physics required to describe the robot systems, et c.

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?

The course is 7.5 hp over one period, and as such should have a workload of approx. 20h per week. From the questionnaire, the median reported workload is "18-20 hrs/week", which is according to expectation.

The distribution of reported workloads is mostly a bell curve centered around the median, but there is a small group (4) of respondents who report a very high workload of ">41 hrs/week".

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?

A: 49 students
B: 9 students
C: 13 students
D: 9 students
E: 45 students

This distribution is similar to the previous year, and somewhat better than during the pandemic.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

Some positive responses (there were many similar comments):

"It is a really nice well structured course with amazing assignments"

"I have background in computer science and I come to KTH with some industry work experience, but had never worked with Robotics before. So, I really appreciate how quickly I was able to learn so challenging topics and concepts, all thanks to the greatly organized and meticulously planned course"

"The course has been very well designed in terms of picking out important and relevant topics and the respective coverage of depth for each topic. This makes it possible for students, even those who are new to the field, to develop a solid foundation in the field."

"Great general overview with good foundation knowledge and hands-on knowledge through the assignments."

Examples of comments suggesting improvements:

"Each topic was really interesting, but since we didn't have much time to learn deeply each topic, it kind of felt unsatisfying as hard to keep up. One suggestion I can give is to make the course for 2 periods and going into a little more details into the topics. And maybe for the final exam, students can give their preference for the topic they liked/interested in the course, and along with normal questions advanced questions can be asked from their preferred topic."

"More exam prep sessions."

"1. Even though the course design is really solid and effective, and allows students from diverse backgrounds to follow the modules quite well, if I could suggest one improvement, it would be to organize regular in-person sessions with TAs to clarify topics. The current lab sessions, unfortunately, do not seem suitable for anything outside the scope of the lab assignments. Also, asking over Canvas Help (either to Teaching staff, or fellow students) to clarify such topics doesn't usually lead to the same outcome when it comes to clarify topics.

2. Having a paper based evaluation for final exams which are multiple-choice type questions, seems quite inefficient, especially when there is an excellent online evaluation platform available and already used for Quizzes. So why not use the same setup for organizing exams as well. Would lead to faster evaluations with less effort on the part of the teaching staff"

"Some topics are hard to discuss in depth using intuition, but further discussed in later courses (at least for SCR students), therefore that is acceptable."

"More lecture to dive into the theoretical topics. Unfortunately, all the lectures were just a small introduction to different topics in the field."

"Definitely too much work compared to the importance of the lab in relation to the final grade"

Some comments from the course responsible:

- There was one exam prep session, were students could suggest questions from previous exams that they wanted to have explained in detail. There were 0 suggestions from the students, so the need for more sessions did not seem very large.

SUMMARY OF STUDENTS' OPINIONS

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

In the quantitative evaluation, the students are mostly happy with the course, giving it favourable grades (on average between 5-6 on 7 graded scale) for all topics but one.

Question "15. I could practice and receive feedback without being graded (j)" received a barely positive average of 4.4 (4 being "neutral").

Since there are approx. 130-150 students taking the course, and a total of 5 assignments, it is very difficult to find the resources to give detailed feedback to all students before they are assessed.

Overall the students seem to appreciate the course, and enjoy the wide range of topics covered. The course is intended to be a foundation for further studies in robotics, mainly for the SCR master, but some students who do not plan to continue with robotics would have wanted a course that was an "orientation in" rather than an "introduction to" robotics. Perhaps this can be clarified more in the course description.

Students who are unhappy with the course either think that the workload is too high, that the labs require too much applied technical skills, or that the wrong topics are covered. Many of these students are not the primary target group of the course.

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 course round went well, the students performed well, and the workload was within expectations. The students seem mostly pleased with the course.

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 differences in experience between:

- students identifying as female and male?
 - international and national students?
 - students with or without disabilities?
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The response numbers are too small to say anything significant. From the comments, there is one student who identifies as having a disability (Autism), who found the exam questions difficult to understand, but no examples were provided. Perhaps it would be helpful in the future to receive input from autistic students on which questions they find difficult.

PRIORITIZED COURSE DEVELOPMENT

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

The main change for the next course round is that the formal prerequisites for the course have been made stricter. Hopefully this will solve the problem of some students taking the course without sufficient qualifications.
