

Report - DD2410 - 2024-12-13

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 had 27 respondents, therefore it may not statistically relevant, but results can be used qualitatively

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 not have all the required knowledge and skills for the advanced parts of the course.

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?

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 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". Based on the comments, the high workload could be for students who spend extra time to get higher grades.

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: 59 students

B: 5 students

C: 16 students

D: 10 students

E: 27 students

This distribution is better than the previous year. (Note that some students still hadn't finished the re-exam at the time of writing this report.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

Positive comments:

"For my programme Systems, Control and Robotics, I feel its a very fundamental course which helps me decide which field to pursue in"
"I very much liked the labs, they were challenging but interesting. Particularly, the lab to find inverse-kinematics numerically and the final project was exciting. The approach of taking quiz before lecture made me prepare for the exam very early"

"The best aspect was to implement the algorithms and methods we talked about in class into "real-world" examples. Even if they were just simulations, it was very fun. The assignments themselves had fun goals, too. The course was overall a good introduction to robotics as a subject."

"The topics taught are exactly what made me pursue Robotics. The course lecturers are passionate, interesting and cover a great broad basis that made me leave the course feeling like I knew a lot about the basics of robotics. For that I think this class is invaluable and very good. I like the courses attempt to take a broad approach to everything and really made it a fun class."

Negative feedback [with comments from course responsible]:

"The quizzes for the first module of the course were way too hard and required reading a lot of material in the course book, most of which was not even relevant. This was done in a better way in the second module, where actual understanding of e.g. behaviour trees were tested. Doing the C-part for the labs was not properly rewarded in the grading, since you still needed to get an A on the project to get A or B. Also, some information needed in the labs were not in the lectures. For example, in the second lab, to get the right error adjustment in the inverse kinematics part, a formula was needed that was not presented in the lectures, and instead was hidden deep in the course literature."

[Comment: the instruction given in the lecture was to follow the instructions in the course book, with a reference to the relevant page]

"To me it wasn't really clear how many details we were supposed to learn of this very broad course until I started solving old exams. Maybe show some exam exercises during the corresponding lecture to give students impression of what is expected from them?" [comment: A full lecture was dedicated to looking at old exams, especially the questions chosen by the students].

"The only difficulty I faced in this course was to know how much in-depth I had to study for a topic. The textbooks have a lot of math and derivations and formulas which were a bit hard to keep up with. Sometimes this was a bit daunting. The exam on the other hand covered surface material while questioning on basics of everything. So some topics I would try to focus more on and I couldn't focus on the other parts as much. Everything else was fine."

SUMMARY OF STUDENTS' OPINIONS

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

Students are mostly happy with the course, but there is some division between groups. The main target group, TSCRM students, perform well, enjoy the course, and find it a good start to their studies, while some other students, especially those who take it towards the end of their master program with no intention of further studies in robotics find it less useful. Most students seem to enjoy the labs and find them a good learning experience. There are no major complaints regarding the organization/administratioOn of the course.

Some students find parts of the course material to be difficult, but the results show the students performing well overall. Some students find it difficult to read the textbook, which is a bit alarming, as it is a basic level engineering book that they should not have any problems with. Especially students with weaker English skills struggle with this.

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.

This year, new prerequisites were intruded for the course, with the goal of keeping students with insufficient prerequisite knowledge from taking the course. The overall results seem better, especially for the exam. However, there are two identifiable groups of students (two specific master programs, TIVNM, TMAIM) who perform significantly worse on the course, perhaps indicating that they do not have the required skills and knowledge to successfully complete the course, or that the course is a poor fit for their program.

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?
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There are not enough answers in the questionnaire to say anything statistically meaningful.

PRIORITIZED COURSE DEVELOPMENT

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

For the next course round, we aim to update the assignments to ROS2, the current version of the middleware environment used for robotics applications. While doing this, we will also make some minor updates to the assignment contents.
