Report - DD2410 - 2021-02-02

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. The questionnaire had fewer respondents than ususal, at 38 answers, or 26% of the students. Therefore it is not statistically relevant, and will mostly 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.)

No regular meetings were held during the course due to the Corona pandemic. Zoom discussions with a group of 15 students from this and previous course rounds were held twice, in connection to the EL2220 seminar series.

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 smnaller 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 advnaced 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.

This year, due to the pandemic, all lectures were streamed in Zoom, and all interaction with the TAs was also online. This led to lower degrees of interaction between the students than typical years, but was probably unavoidable due to the circumstances.

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 expected workload for the course should be 20 hrs/week. This was also the most common response in the questionnaire, but there is a thick tail of students who spend more time. This is probably due to two causes:

1) Some students do not have the necessary prerequisite knowledge, most typically not being familiar with the Python program language from before, or being weak in linear algebra.
2) Due to the higher grades being awarded to students who take on more difficult assignments, some students (including overlap with above group) take on more difficult assignments than they are prepared for, and spend more time with these than they would perhaps have done if the course was only examined with an exam. This can be observed in the automated submission system for the assignmnets, where it is evident that many students spend significant time on the more advanced parts, even after passing the basic parts of each assignment.

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: 39 students
B: 14 students
C: 13 students
D: 13 students
E: 41 students

The portion of students with an 'E' grade is significantly higher than previous years. The assignments have been the same, the lectures have been the same, and the textbooks have been tha same as previous years, so a probable cause is the pandemic, and the students not being able to sit in groups in the computer rooms and discuss the assignments as they work.

STUDENTS´ANSWERS TO OPEN QUESTIONS
What does students say in response to the open questions?

Positive:
"you learned a lot and it was interesting! Did not know I was interested in robotics on beforehand"

"The course administration should recieve huge credit for making such a tidy and nice Canvas page. This is far from standard at KTH. This makes a huge difference for the course experience. The Canvas page made it possible for us to find all the information we needed without asking someone. This makes life so much easier for everyone involved and creates certainty among students about what is the official information. It is so nice to always be able to reference the Canvas page in discussions. Thank you! "

"The best aspect of the course were the weekly assignment required to upload on kattis. It required additional knowledge of the problem to solve (that is overed on the lectures) and acquire hands on experience."

"[The best part was] Being able to directly apply what we learned in theory to the labs"

"[The best part was] All the real life examples and practical assignments."

"[The best part was] The teachers! I have taken robotics and control classes before, but I had a hard time understanding some of the concepts as the teachers did not put that much effort into explaining everything. In this course, the teachers were invested in making sure we understand the material and were also available at all times to answer any questions we might have"

"Amazing course!"

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Negative:
"Paradoxically I think the best part of the course is also the part I subjectively like the least. I know, weird statement. I consider the best "attribute" the course has to be its breadth of content. Since it serves as an introductory course for robotics, it can give the students taking it a wide amount of "sample" subjects to try out, to decide what they want to deepen their knowledge in. I feel that the written exam somewhat turnsthat strength into a weakness though. The breadth of the course means that the written exam essentially tests a whole lot of root memorisation,which I do not like, personally. The exam was not too hard though, so I suppose I will forgive it for that"

"This should be a semester-wide course. There was not enough time to properly focus on this course due to too many deliverables in a short period. Also, I wish there was more time to do the assignments. Since ROS is not very intuitive for beginners, it is difficult to get familiarized with it and deliver assignments at the same time"

"I found the final project frustrating, especially since it involved a lot of debugging and not much "quality" learning, but I assume this was intended as it had been emphasized quite a few times that the main goal was to make us experience what it is like to work at a company wherethere is no documentation whatsoever. I think the scope of the project could have been reduced a little or more hints could have been given as to what the expectation was (e.g., how to reset the behavior trees programmatically, in what way was the robot supposed to detect the cube, etc)."

"The discussion forum is great just as the rest of the canvas page. However, I would suggest that the administration is even more active in the discussion forum to make this even more valueable. Quick answers would make the discussion forum even more attractive and possibly lower overall administrational load for the course responsibles"

"Also Kattis doesn't really enhance learning in my opinion. Let's say the I've tried hard to reach C level for a lab and doesn't succeed then I will not know what I've missed. This is like having an exam and not posting the solution. I believe that it also takes away the focus from learning thematerial as you need to spend lots of time correcting very small errors. I think that a better solution would be to have presentations every week and remove to exam. This would make each student focus on the material and learn everything when you do it and you will get assessed straight away. "

"The first part on industrial robotics (kinematics, dynamics, etc...) should be made shorter and we should have more space for the final part on mapping, planning, etc"

"Less focus on labs(programing) and more focus on theory, last lab is just shit, I might learn some but there are so much more efficent ways to learn."

SUMMARY OF STUDENTS' OPINIONS
Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

The students are mostly positive, but the two topics that rate the lowest score (still positive on average, however), are:

15. I could practice and receive feedback without being graded
22. I was able to get support if I needed it

From this, we can conclude that the students were not satisfied with the support and feedback from the teachers. The scores are similar top previous years, and based on the comments, it seems that students expect faster response to questions, and some are frustrated with the feedback from Kattis. The forums in Canvas were tended every day day by the TAs, and there were two scheduled help sessions per week. This should be sufficient for a course at a Master level, but for most students this is their first course at this level, and they may not be used to the expected independence.

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.

Overall the results seem reasonable. Many students had difficulties due to the pandemic, ranging from limited access to the computer labs, or not finding peers to discuss with, to not being able to travel to Sweden or attend the course in Stockholm at all. Based on this the results are reasonable. The number of students passing the course is not significintly different from previous years, but more students were only able to achieva an 'E' grade than previously.

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 main problems are mos probably due to Corona. Hopefully the students will be able to attend the course on campus, and have fruitful interaction with their peers and instructors again next year.