

Report - IS1200 - 2024-01-15

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.

We have used the following method:

1. Course committee meetings. Two students volunteered to be part of the committee in the beginning of the course. We had two meetings: one halfway through the course, and the other at the end of the course.
 2. At the end of the course, we sent out the LEQ form to all students.
 3. The students were encouraged to send emails directly to the course responsible and/or examiner with feedback.
- We try to encourage students from different programs with different background to take part in the course committee.
To enable support for disabled students, we always inform (on Canvas) about where they can find more information about their rights (FUNKA). We also take into account specific feedback from FUNKA 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.)

We arranged two meetings during the course: one in the middle, and one at the end.

COURSE DESIGN

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

The course teaches the fundamentals of computer organization, including both software and hardware. The course is divided into 5 modules:

1. C and Assembly Programming
2. I/O Systems
3. Processor Design
4. Memory Hierarchy
5. Parallel Processors and Programs

The course is divided into 2 LADOK parts: (i) Labs and home labs (4.5 hp), and (ii) Written Exam (3hp). There are in total 12 lectures, 5 exercise sessions, 4 seminars, 4 laboratory exercises, and one mini project. The course ends with a 5-hour written exam.

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 perceived as challenging and time demanding.

The average workload is 28.5 hours / week based on the course evaluation. This compares to 28.6 hours/week in 2023 and 26.5 hours/week in 2021.

While the perceived average workload is similar to one year ago, the variance is higher, with more student spending more than 40 hours on the course and more students spending less than 10 hours on the course, which is a worrying trend.

We believe that the high workload experienced by many students is due to a combination of many factors:

1. Many students do not have sufficient prerequisite knowledge of programming, and computer use in general. This problem has been confirmed with discussions with the students who don't feel to possess enough skills to go through the course.
2. The students are attending their first year at KTH, and many may not have adjusted fully to university studies yet. Combined with the high pace of this course (only one period), this can come as a shock to many.
3. Some students in the evaluation claimed there is no way to get help. This is unclear since we have many unused lab slots (significantly more than in IS1500), we have lunch Q&A sessions, and we have a rolling person each week answering any email that we receive with doubts.

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?

2017: 50% pass rate
2018: 60% pass rate
2019: 68% pass rate
2020: 62% pass rate
2021: 45% pass rate
2022: 47% pass rate
2023: 52% pass rate

Detailed statistics for this round (2023):

F: 47%, 101 students
Fx: 1%, 2 students
E: 30%, 65 students
D: 11%, 24 students
C: 7%, 15 students
B: 2%, 4 students
A: 1%, 3 students

The pass rate is higher than one year ago demonstrating better results from the students (while worse scores on the course evaluation).

The pass rate is lower than in pre-covid time because the course moved to a digital examination, and the potential reasons for a lower pass rate have been discussed in the previous two course analysis. We can now exclude that online teaching was the cause for the lower grades as we moved to on-campus activities. We believe that the lower pass rate with respect to the pre-covid time is mostly due to the digitalized exam where students are required to write code that works correctly. The exam highlights the difficulties by some students in independently writing and running basic code, as well as debugging it, which could not be assessed with a written exam.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

In general, the students are happy with the course content and teachers. The main problems students experienced were related to the pace of the course.

The course evaluation shows that there are mixed feeling about the different course activities. Some students state that labs are the best part, some others that are irrelevant. Some students state that the project is very useful, some others that it is an unexplainable extra overhead.

In general, the best aspects of the course seem to be:

- + Interesting topic
- + The project (even though it is time consuming)
- + Good and helpful teachers and assistants
- + The lectures

What could be improved

- The project part could be improved with more instructions on how to get started.
- Reduce the amount of course work (even though it is the same workload since many years)
- female students felt that they were questioned more during the labs. This is the second year in a row and it should be avoided by informing the TAs about this problem.

Advice to future participants

- * Study along with the course. Do not postpone.
- * Read the book
- * Do not miss exercises and lectures
- * Use git/github for the labs and project
- * Work together with other students

SUMMARY OF STUDENTS' OPINIONS

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

The average response to LEQ questions are lower overall compared to the previous course round.

Judging by the students' comments, this is mainly because of the experienced increase in workload compared to previous years (even though the activities were identical).

The results were surprising because:

- We ran all the activities extremely carefully and paid extra attention to all details.
- We increased the number of time slots for labs in the hop of having more time to help the students.

Some items in the LEQ had a score <4, which indicates a general negative feeling. The items were:

4. The course was challenging in a stimulating way.

- The main understanding here is that the course is too demanding to be stimulating.

15. I could practice and receive feedback without being graded.

- The main understanding here is that most activities include examinations in labs or seminars. We however have exercise sessions (even though the feedback is not individual, but rather normal Q&A during the session).

16. The assessment on the course was fair and honest.

- this may be due to some cheating attempts within the seminars, where I (as the examiner) had to report many cheating attempts. The students claimed that it was not cheating but rather a close collaboration. This may have affected this item because nothing changed since one year ago.

17. My background knowledge was sufficient to follow the course.

- this is common problem for which we have already tried to provide more background during the lectures.

22. I was able to get support if I needed it.

- it is unclear why this point received a low score. We had plenty of unused opportunities to receive help.

All LEQ items are in the >0 side where the highest scores were for Question 21 ("I was able to learn by collaborating and discussing with others"), Question 7 ("The intended learning outcomes helped me to understand what I was expected to achieve"), and Question 11 ("Understanding of key concepts had high priority").

The lower scores were on Question 15 ("I could practice and receive feedback without being graded"), Question 17 ("My background knowledge was sufficient to follow the course"), and Question 22 ("I was able to get support if I needed it").

Summary of feedback from the course committee meetings + Overall good course + Great teachers at exercise sessions

- + Virtual machine for exam worked great
- Many students do not have sufficient programming background
- Too much work required

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 works well in many aspects. The course has been refined and matured significantly over the years. However, for this course round (2023), and also for the last three course rounds (2020, 2021, 2022), we have noticed a clear increase in the number of complaints regarding the course workload. In addition to this, we have had to schedule large amounts of retake lab sessions for these three course rounds, because a large amount of students are not able to finish the labs during the ordinary lab sessions. This has not been an issue in previous years.

It is difficult to pinpoint the reason for this decline, and we believe it is rather a combination of many factors. We identify some possible factors under "THE STUDENTS' WORKLOAD" above.

One reason for the lower scores this year was also a "large" case of cheating attempts involving more than 40 students, which has resulted in dissatisfaction from the students.

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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The strong areas in the learning environment are the teachers and lab assistants, the course material, and the course organization. This also agrees with the student feedback from this and earlier course rounds in the LEQs, the battery evaluations, and the course committee meetings.

As mentioned before, a possible weak area that have been especially prominent for the three most recent course rounds is the high workload and stress experienced by students. Again, the reason for this decline is not obvious, and we (the lead teaching team involved in the course) do not believe we can do any major changes to reduce the workload without also modifying the intended learning outcomes. It is interesting that this has become a problem in IS1200 during the last three rounds, but not for IS1500 (the same course that we give for CDATE). We have evaluated the possibility of removing the mini-project for lower grades, but we decided not to do it to avoid disaligning the IS1200 and IS1500 course. We considered reducing the workloads on the lab activities, but we believe the labs are useful to help the students in preparing for the exam.

It is important to investigate the problem above for future course rounds.

As far as we know, IS1200 will move to Year 2 starting in 2025 so this will alleviate the above problems as the students will have a stronger background to take this course.

PRIORITIZED COURSE DEVELOPMENT

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

We are redesigning the course and updating it to new RISC processors. Doing this requires rewriting slides, labs, seminars, exercises, and the mini project. We are taking this opportunity to improve all these activities so that the course run in a better way, reducing the workload on the students. The new course using RISC processors should be first given in HT 2025.

For the next VT24 course, we will improve the lecture materials and provide some additional help on getting started with the project.

OTHER INFORMATION

Is there anything else you would like to add?

We (the teacher team) would like to thank the students and everyone involved in the course for their efforts and feedback. Please do not hesitate to send us emails at is1200@ict.kth.se if you have any further comments or suggestions.
