Report - IH2657 - 2021-06-28

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):

Gunnar Malm, gunta@kth.se jointly with Carl-Mikael Zetterling

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 standard LEQ-22 with two additional questions was opened the day after the final examination. Response rate 7 (20). The actual number of active students was 15.

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 students were given the opportunity to comment on the course at the end of the examination session. Some feedback was given at the nanotechnology master program meeting on June 29. In summary some topics could be redistributed between this course in P4 and IH1611 in P3. Examples are electronic devices (transistors) based on III/V materials. This topic was previously covered in applied physics courses that have now been redesigned with a focus only on photonic and optoelectronic devices.

COURSE DESIGN

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

This course round featured a final oral oral examination with a set of pre-defined question per topic/chapter. The new format replaced a short written exam.
A new course book was introduced and most of the lectures followed the chapter structure of the book.
Three lectures were based on original material developed by Prof. Malm (roadmap/scaling, sustainability and spintronics).

Some key reading on MOSFET scaling laws from the previous text book was kept in the curriculum. As an estimate, 90% of the course material was used for the first time.
The simulation lab in NanoHub was updated with one new topic (compact models), some small changes were made to the rest of the topics.

The on-line course format included break-out sessions as a flipped class-room activity.
Video recordings of all lectures were available for the students to catch up missed classes and for review prior to the exam.

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 workload was close to the nominal 20 hours per week. Many students had an extremely lab-intensive microsystems course in parallel. That clash is a recurring problem from previous years.

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?

Only 13 students participated in the final oral examination and passed passed all the modules in the course.
Two (2) students might appear on the August re-exam, 5 students left the course or were re-registered from 2020. These 5 students will most likely not attempt to finish the course.

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

Feedback on the teaching was very positive for both professors. Students were happy with their level of expertise and readiness to answer questions.
The simulation lab schedule was too compressed. That could easily be fixed until next course round. The simulation lab was the most appreciated part of the course since it is focused on a key concept - scaling.

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

A few students dropped the course due to lack of required prerequisites. This conclusion can be supported by emails and personal conversation and at least one survey reply. The lack is mainly in general electronic device and circuit background. Some nanotechnology students have other majors from the bachelor level and struggle for that reason. Since the course is elective it is important to include the right information in the course plan. A course plan update is under way for the September 2021 round of revisions.

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.

Malm: The feedback displayed unusually many positive comments. On of the best course rounds I have been involved in.
Many students performed well, at B or A level but there is still a considerable spread in the learning and student ability to discuss the covered topics at a deeper level. The oral examination format probes such deeper learning quite well. Some student suggested that the written exam format should be reintroduced after the end of Covid-restrictions. As a general observation the teacher team does not agree to this suggestion.

Zetterling: Survey looks good, the lab schedule could be changed.

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 theme 'togetherness', item 5 in the LEQ scored very low at 4.9. This is clearly related to the video-based course format due to the Covid-19 restrictions.
Some students were strongly affected by this lack of togetherness, while other could handle it reasonably well.

Gender: From the very limited statistics it appears the female students had a slightly less positive experience of the course. This could be a coincidence. The trends in replies from male and female students were identical in the all the 22 themes!

PRIORITIZED COURSE DEVELOPMENT

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

Five prioritized development tasks are given, in descending order of urgency.

1) The intended learning outcomes (ILO:s) should be updated, to fit the criteria based grading scheme at KTH. This exercise has not been attempted/is delayed.

2) The required prerequisites should be stated in an unambiguous manner.

3) The assigned reading, of two to three chapters per week, should be reduced by better selection of content. The course design this year was basically a comprehensive coverage of the text book chapters and more preparations are needed for next year. Original material by the professors received good feedback and should be emphasized also in future course rounds.

4) Renewal of the simulation lab should continue (only one topic was updated this year).

5) Practical / hands on measurement labs could be considered. Measurement data are used in the simulation lab so there would be a good connection and motivation for introduction of a practical lab. Plenty of relevant samples are available for the PhD research at the division.

OTHER INFORMATION

Is there anything else you would like to add?

N/A