Report - EI1120 - 2019-03-28

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):

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COURSE DESIGN

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

General structure:
14 'Topics', each with associated lecture, tutorial (övning), besides lecture notes and self-study exercises available on the webpage;
12 homework tasks (each topic except the first and last) of which any 6 are required for PRO1, and all give a small exam bonus;
2 lab tasks, both required for PRO2, each taking 2h and not requiring any report;
2 part-exams (KS) of 2h each, not obligatory but able to substitute for two of the three 'sections' of the final exam to make the course modular;
1 project task on solving practical problems by computer at the end of the course - this substitutes for the final question in the exam;
1 final exam of 5h covering the whole course content split into three sections, each of which has a minimum requirement for passing.

Basic rationale behind the design is that:
a student who isn't easily on campus or who doesn't learn well by listening or group work can take the course by taking just 2 labs and 1 exam, besides remotely submitting 6 homeworks;
a student on the other extreme who benefits from seeing material presented and interacting with others can use lectures to give the initial idea of each topic, tutorials for worked examples, can work in a group on the exercises and homework tasks, and can do KS1 and KS2 and the project so that they can focus on just three out of the nine questions in the final exam.

Changes since last course-round are only small:
* the project is now a separate event with more time and with an additional lecture/tutorial for help
(the project was introduced last year, when it replaced the 12th homework);
* we made sure to give quicker homework marking, particularly at the start of the course;
* some three weeks into the course, feedback resulted in subsequent homework deadlines being made longer - both tasks in a week were due early the next week;
* the scheduling of the last few topics resulted in a rather intense period between the last two weeks of the course (end wk8, start wk9), which felt more intense than last year and was commented on by several students.

THE STUDENT'S 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?

Based on the LEQ, most respondents were around the expected 20h/week (for a course running at 50% of the study time).
No unreasonable value was reported, except 1 person's 0-2 h/week, which would make it very impressive if that person passed.

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?

As usual, plots of statistics of the results have been posted on the course webpage.

Grades were not greatly different from the last few years. I consider them to be good: it is pleasing and impressive about the ability and commitment of the student group that there are so many high grades (~70% at D or above, including 20% at A), in spite of their general acknowledgement that it's an intensive and demanding course that presents a lot of new material and requires plenty of practice.

[Addendum: since the autogenerated final page of this Course Analysis still shows "no reported results", months after the results were reported and signed in Ladok, I'll give a quick summary here: 77% passed the exam in March, and 84% passed after including Fx completion; with one or two exceptions, all who passed the exam also passed the course.]

OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT
What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

The 12-question LEQ was open for a week, shortly after the exam, and was answered by just 16 students out of the ~107 seen on the course, which calls into question how representative the responses are for the whole student group. (Experience of low LEQ response-rates from other courses has until this year made me avoid it in this course - in previous years I used paper in a final lecture, or a simple web form, and had response rates generally over 40%.) However, I suspect that any student with a very negative view of some aspect of the course would have been stimulated to give a response, as we know that LEQs in KTH programs can get very negative responses when a problem is perceived.

The polar diagram in the automatic summary of responses to the LEQ showed average scores of between 6 and 7 (7 is highest) for all statements except #7 and #10. The two lower-scoring statements are discussed more in the following section (Analysis) and are not considered to be of importance (that may sound complacent and heretical, but please see the discussion!).

The other statements had such similar responses that there seems no point in speculating further on the small differences. It is pleasing that the main features of the learning environment - meaningfulness, comprehensibility, manageability - have been perceived to be good. This fits with responses in recent years.

There was no significant difference between any identified 'different groups' of respondents.

ANALYSIS OF THE LEARNING ENVIRONMENT
Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

Most of the statements received a strong agreement, as mentioned above: all except the two described below averaged between 6 and 7 (i.e. between 2 and 3 in the -3 to 3 scale).

Particularly strong "much agree" responses included:
The ability to learn by discussing and working with others, which was very much intended when developing the homeworks, project and labs.
Understanding of key concepts had high priority.
Challenging in a stimulating way.
Background knowledge was sufficient.

Statement #7 averaged only 5 (out of 7), obviously lower than the others.
It is: "The intended learning outcomes helped me to understand what I was expected to achieve".
Students' comments mentioned "I didn't read them" or "I don't really look at those". Judging from the comments, the issue is not whether the ILOs match well with the course, but just that the students don't look at them. There may have been other respondents who didn't comment, for whom this was the other way round.
The "Kurs PM" states that the best way to understand what is required in this course is to look at some past exams: I see no more succinct way of indicating the scope, level and style of the course, which certainly cannot be conveyed other than very vaguely in 'ILO's occupying some lines or a page of text. So I find the students' approach quite sensible.
However, for anyone who does look at the course plan, I can understand that the current version - written before I had the course - could and should be clarified and brought closer in line with what we do. We have, during this study-period, submitted a revision that should go through an EECS-school committee at some time before the next course round: it gives a bullet list of the methods, components and concepts studied, but inevitably is inferior to looking at past exams and projects if one really wants to see the level and style.

Statement #10 averaged nearly 6, which is still distinctly below the level for the other ten statements.
It is: "I was able to learn from concrete examples that I could relate to".
To try to understand the responses we have to consider different levels of abstraction, i.e. different possible interpretations of concrete vs abstract in the context of this course.
'A'. Most of our circuits were abstract, in the sense of being diagrams showing ideal components without direct application-relevance: but these are nevertheless concrete examples within circuit analysis, and I have for several years taken care to introduce a new concept by soon giving a concrete example (of a specific circuit and its solution) rather than abstractly describing the new concept.
'B'. I suspect that lower agreements with point #10 are mainly based on interpreting 'concrete examples' as 'application examples': the comment about "a bit in the project, but otherwise not much coupling to the real world" gives some confirmation of this.
But I suspect that interpretation 'A' was what the creators of the LEQ meant. Nothing from the evaluation or my observations leads me to believe that we have a problem with too much abstraction of that type, although probably we could still improve a bit. With the recently introduced project, we have been much more 'applied' during the last part of the course, thus being more concrete even in the sense of interpretation 'B'.

ANSWERS TO OPEN QUESTIONS
What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

Advice to future course participants.
Major points (made by several students):
* keep up with the course from the start
* take advantage of the offered opportunities to pass parts of it (KS, project) during the period.
Points from just one or two students:
* follow the intended sequence of activities
* go to lectures and tutorials
* 'KCL is the answer to 90% of your problems' !

General recurring points:
* It was good to have the structure of clear topics with their regular sets of events and tasks.
* It was good to have the encouragement to continuous work, but with also some flexibility (not all obligatory).
* Lectures and tutorials were appreciated.
* The course was experienced as particularly intense in the final 'section' of the course - rather too intense, in fact.
* In contrast to other courses, the continuous-work principle caused the period to be quite stressful, but the exam week was then relaxed for those who had succeeded in the KSs and project (so have we shifted the work too far?).

Points related to improvement for future rounds:
* Main thing: avoid a very intense time near the end, which risks leaving some students behind and causing pointless stress and bad learning.
* Mention more about practical applications - one respondent suggested this.
* Ensure teaching assistants know about the 15-minute break system and keep carefully to it, without displacement in the way we (I) commonly do in small MSc courses!
* Ensure big enough rooms.
* There's a request, as in the mid-term survey, to write more headings on the board during lectures: I don't find it fits well to do many headings for our type of presentation, but we could probably do a bit more than now without any negative consequence.
* Remember to introduce units used with new components: it seems we didn't mention farads and henrys this year, but just started using them.

PRIORITY COURSE DEVELOPMENT

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

The most clearly important point to improve for next year is to avoid this impression of excessive intensity somewhere around the second-last week of class time (topics 11 & 12). This will be further considered when we check and amend the VT20 schedule, and then when planning how to spread the topics between the days.

The project task seems to have been liked: almost everyone did it; a surprising proportion (around 40%) tried the exact solution instead of the easier approximate method that had been permitted; and there were several comments about it being interesting. It allows us to get a bit applied, and to improve at using computers for plain arithmetic, matrix algebra and symbolic manipulation, which are useful general competences. This time there were a few misunderstandings that occupied some students' time for a day or two: e.g. about how a load of specified power was to be treated when operating at off-nominal voltage. For next time we should try to avoid any such misunderstanding by emphasising such points in the written and presented introductions to the project. One reason for misunderstandings has been that we're trying to force students to make their own circuit models from a described physical situation, so we intentionally do not provide a circuit diagram to solve as was done in earlier parts of the course.

Setting of homework deadlines is still an open question. The mid-term evaluation had several strong and well-put views about the short homework deadlines being a trouble. This was even discussed in previous years, although never so strongly during the first part of the course. The compromise with deadlines is between encouraging students to finish one topic before the next, versus having more flexibility around other tasks, social time, illness, etc. An alternative or additional option is reducing the number of homeworks or reducing the size of each, but these go against the idea of covering each topic at an exam-like level. One respondent to the LEQ commented that it was better the way we had it before changing. I was surprised during the course by students apparently wanting to start the homework simultaneously with the topic being introduced: this was not intended, unless they've already studied the topic for a day or so, as the homework is the last part of the topic, after building up basic competence on the exercises. The current idea for next year is to keep the longer deadlines that we introduced this time, but to have a 'recommended' deadline in accordance with the previous system, for those who want to keep up.

Less high priority:

It's tempting to make the lecture notes neater and written on the computer - but this was tempting last year too, and it didn't happen! The current setup works, it would take significant time to make changes well, and it didn't get any negative comments about its readability this year (last year we asked specifically), so this is not a top priority.

It would be good to have some online tests that can be used e.g. for some or all homeworks for quick feedback with less time spent by teachers, and for pre-lab testing to ensure the lab time is efficiently used. Available time is one reason that this hasn't happened yet. Others reasons against trying to have homeworks done as online tests is that we feel the human feedback helps students to take effort over their responses, and that having to do the same task as others (instead of a randomly chosen one from a set) makes the homework more social for group-work. These potential problems could be worked around to some extent, and might be less than the advantages. It would be interesting to try, but this is also not a high priority.

OTHER INFORMATION

Is there anything else you would like to add?

There were remarkably many students this time: 107 were seen at some point, and 103 took the exam (ordinarietenta).
The number expected from experience of previous years was more like 70. It's nice to have plenty of participants, but we need to be more careful with rooms for next time, checking student numbers with the relevant programs. On the first lecture the room became overfull. Labs had to have further sessions added in the schedule, to fit all the participants. I mention this here as an administrative detail that's not really part of Course Development. It seems three causes happened together to give the high numbers this year: 1. a rather bigger cohort from Energi- och miljö; 2. nine students from Elektro who've taken this course because they came through the Open program and thus missed the 1st-year circuits course; 3. several exchange students, apparently from Medicinsk Teknik, needing a linear circuits course.

See Studenternas Resultat, above, for summary of passes.

Kursdata 2019-06-03

EI1120 - Elkretsanalys för energi och miljö, VT 2019 CENMI

Kursfakta

Kursen startar:	2019 v.3
Kursen slutar:	2019 v.11
Antal högskolepoäng:	7,5
Examination:	PRO1 - Projekt 1, 1,5, betygsskala: P, F PRO2 - Projekt 2, 1,0, betygsskala: P, F TEN1 - Tentamen, 5,0, betygsskala: A, B, C, D, E, FX, F
Betygsskala:	A, B, C, D, E, FX, F

Bemanning

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Lärare:	Nathaniel Taylor <taylor@kth.se>
Assistenter:	

Antal studenter på kursomgången

Registrerade:	0

Prestationer (endast registrerade studenter)

Examinationsgrad[1] [%]	*Det finns inga kursresultat inrapporterade*
Prestationsgrad[2] [%]	*Det finns inga kursresultat inrapporterade*
Betygsfördelning[3] [%, antal]	*Det finns inga kursresultat inrapporterade*

1 Andel godkända studenter
2 Andel avklarade poäng
3 Betygsfördelning för godkända studenter