KTH Industrial Engineering and Management

Report – MJ2380 20-10-23

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Respondents: 36

Answer Count: 8

Answer Frequency: 22.22 %

COURSE DESIGN

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

Viktoria Martin was course examiner, Francesco Gardumi course responsible and several teachers delivered part of the teaching and supported the assessment: Vignesh Sridharan, Youssef Almulla, Agnese Beltramo, Ioannis Pappis and Will Usher. The course responsible took overall responsibility for organisation of the course, communication with students and assessments and delivered lectures and labs to a great extent. The course examiner took charge of large part of the final grading.

The course is organised in 5 lectures and 6 computer labs. The lectures are intended to provide key concepts for the lab activities and the labs deal with both individual and group tasks that are delivered as assignment and graded. The final grade is a weighted average of the grades from the assignments, with modality extensively described on Canvas and during the first lecture. Since this is a 9 credits course, significant workload is required of the students beyond in-class hours.

The Intended Learning Outcomes of the course had been changed few months before the start, to better reflect the overall objective. This would be to understand and develop critical thinking upon the discipline of long-term energy systems analysis and planning and the use of energy system modelling tools. The course responsible strived to communicate to the students that critical thinking and analytical mindset were the most important outcome. He also kept remarking, at the end of each class, that feedback by the students was essential to improve the course's quality. In this view, besides the Course evaluation, he published on Canvas a short survey after each lecture: this included one quiz question ('How do you evaluate today's lecture on a scale from 1 (lowest) to 5 (highest)?'; and one open question ('Kindly motivate your answer and provide suggestions for improvement, if any').

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?

The students reporting highest workload reported a maximum 20 hours/week, which means 160 hours over the entire course duration. This is below the 240 hours that would be required of the 9 credits, but deemed compatible with the high cognitive requirement, independence required of the students and also workload beyond the course itself. Some students remarked in the course evaluation that significant workload is required, but mostly pointed out that this is expected of the 9 credits and it should be taken into account when the students make their study plans.

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?

3 of the registered students did not show up at lectures and labs and did not submit assignments. All others passed the course, with a minimum grade of C. This trend is similar to the one recorded in previous years for the same 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?

Student's satisfaction seems in general to be strongly skewed towards positive values and the comments confirm this. In the course evaluation responses, 1 of 8 students seemed on average to have more markedly negative remarks about the workload and the learning process associated with the modelling tools used in the course. Although not statistically significant, some of the negative comments seem grounded in potentially real challenges related to the learning process in the course. They were analysed and will be addressed as discussed below. No difference in learning environment between groups of students was reported.

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?

The response rate of students to the requests for feedback was not high. This may have bad and good reasons. The good reason could be that most students did not feel like voicing any particular concern. This could be confirmed from the fact that from the very start no strong criticism or dropout occurred. On the other side, I feel I should have shown better to the students that their feedback is taken seriously, by both making adjustments during the course and by showing at the start of the course the evaluations from previous years and the actions taken. This will be done next time (VT21).

The evaluations show general satisfaction with the course, especially with the passion and involvement of the teachers, with the clarity of explanation of the expected learning outcomes and rules, with the interesting and new topics, with the challenging tasks and with the link between the lab activities and the final project.

There is sporadic criticism, revolving mostly around the impracticality of some tools using during the course (e.g. a model interface that did not work on Mac computers and caused students to lose some time, or sometimes unclear mechanics of the modelling tools), some repetition between two lectures, impractical arrangements for the creation of groups and some lack of support during the work on the final project (i.e. a plenary support session).

The positive feedback will greatly help the course responsible and teachers identify what worked well and needs not changing. I feel it responds indeed to what I wanted to communicate. The criticism is well taken and understood: most seems due to problems in some of the practical arrangements and I did realise that myself during the course. Corrective actions will be taken as detailed below.

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?

Both in their positive comments and criticism, students definitely provided important feedback for the future development of the course. This responded to a constant and repetitive call for feedback that the course responsible made during the teaching sessions and is highly appreciated.

PRIORITY COURSE DEVELOPMENT

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

To start with, despite the general positive feedback on the alignment between ILOs and course content, I would like to improve on the constructive alignment between objective, ILOs, course content, course activities and assessment. Especially regarding the assessment, I would like it to be a continuous process throughout the course, with more occasions for feedback, by both the teacher and peers. Reviewing assignments of peer groups and discussing them in class could be a way.

Secondly, I shall present upfront the outcomes of previous course evaluations and show that actions were taken and that feedback is actually taken into account.

Third, I shall make a better use of the Canvas platform, particularly using more the discussion forum, the modules and the features for forming groups.

Regarding tools, the use of tools that are incompatible with some operating systems or that require the installation of too much software on lab computers or on student's computers will be avoided. Such tools will be replaced with well-tested and user-friendly online based tools, requiring minimum installation and preparation by students and much more resilient to bugs.

Regarding content, focus of the lectures and labs will be shifted from explaining concepts and having students filling inputs into models to developing own understanding of key dynamics of energy systems by use of models. Here, we welcome especially one point of criticism expressed by one student in the course evaluation, answering the question 'Is there anything you would like to add?'. Although the comment is by one person only and not statistically significant between the students, it is considered to provide a very important point of reflection. This shall also be more directly linked to similar mind exercises carried out with official from governments in capacity building activities organised by the UN on the use of similar models. I would also like this process to see more active engagement from the students and not passive execution of instructions. Therefore, approaches will follow more a flipped classroom and learning-by-doing approach.

Lastly, in consideration of the COVID-19 pandemic, the course will be held entirely online. This will however not be a hindering factor, it will rather represent an opportunity to improve the content, the constructive alignment, the push towards active learning and the use of state-of-the-art blended teaching & learning techniques. Despite the course being online, higher interaction between students groups and tutors will be planned, especially for the 3 credits project phase.

OTHER INFORMATION

Is there anything else you would like to add?

Addressing the wish list for course development may take more than one edition of the course, due to the fact that different strongly new practices and tools need to be tested. Additionally, re-designing part of the course and learning environment will require significant time of the course responsible, time that may not be available in one go. Finally, the restrictions posed by COVID 19 may add some challenges for the way changes to the course may play out.