Report - EG2100 - 2020-01-22

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.

The course structure involved lectures, project work hours (TA sessions), and examination. According to the established Intended Learning Outcomes (ILOs), in order to successfully complete this course, the students should have been able to:

ILO1. derive and describe computational models to study and analyze the static performance of a power system under
a) symmetrical as well as,
b) unsymmetrical conditions,
ILO2. formulate and perform load flow computations.

This year, the examination consisted of a written exam (A-F) together with a project with four assignments. For the written exam, there were three questions, namely Q1 (related to ILO1 a)), Q2 (related to ILO1 b)) and Q3 (related to ILO2). For each question, the scores of 0 (failed), 1, 3 or 5 (highest) were assigned. To pass the written exam, at least score 1 was required for each question.

The project with four assignments were related to all ILOs. To pass the project, all assignments must have been approved. To successfully complete the course, a passed project and a passed written exam (earned during the same academic year) were required, and the grade for the entire the course was based on the grade of the written exam.

For the project, the course offered project work hours (TA sessions) during which the teaching assistants were available in the classroom to assist the students with the project.

The main change compared to the last course offering is the examination which has been designed in such a way to ensure that all ILOs have been reached when the course has been passed.

In the previous academic year, max 30 points were assigned for the project and max 70 points for the written exam. The grade for the course was based on max 30+70=100 points (earned during the same academic year). At least 65 points were required to pass the course. In this way, the course might have been passed without having reached all ILOs.

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?

Both from the results of the standard KTH course evaluation survey and the outcome of the course evaluation meeting, it may be concluded that the workload in EG2100 (Power System Analysis) course seems to correspond to 6 credits quite well. After some recalculation of the course survey responses about the estimated workload, the average total work hours during the 20 weeks of the autumn term can be easily placed in the interval 162-202 hours/20 weeks for the main group of respondents (33/34). By accounting for the student with >41 hours/week answer (which seems to be completely isolated from the rest of the students' answers), these numbers go slightly up. The students commented that the number of hours per week they devoted to this course depends on the personal learning curve and background knowledge and that a significant portion of these hours was allocated to the projects (home assignments). Most of the students characterized the workload as "reasonable", "fair", "manageable" and "well-distributed". Furthermore, in the evaluation meeting, the students stated that they believe that 6 ECTS credits assigned to this course are appropriate and in line with the workload in other KTH courses that carry the same number of credits (in average). The response rate in the course evaluation survey was 40% and the evaluation meeting took place at the end of the course (2020-01-13), after the written exam was held.

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?

Out of 87 registered or re-registered students, 73 (84%) students attended the written exam out of which 50 (68%) passed the course. An interesting and relevant comparison can be made with the previous year results, when the students also had written examination as a part of the course assessment (however, with different grading criteria and assessment rules). Compared to the previous course offering, this year it appears that there is almost an identical percentage of students with high grades (A and B) as well as of the ones who received F after writing the exam. On the other hand, there is a slightly larger number of students with FX grade (approx. 3% more than in the previous year). Quite probably, this is due to the new course assessment regulations. Additionally, there was a certain number of previous year students (international students who are not in Sweden) who were re-registered later during the course and who consequently submitted their assignments late or not at all (which could affect their motivation to take the written exam-16% of students did not attempt to write it compared to last year's 9%). More discussion about this issue is provided below, under the priority course development heading.

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?

By observing the average response to LEQ statements for all the respondents, the general feedback appears to be quite positive in the terms of all the three students' aspects of experience (on emotional, cognitive and instrumental level). The learning experience polar diagrams show that indices of agreements with the LEQ statements vary from 3.5 to 6.4, with 5.5/7 being an average, which is an encouraging result that speaks in favor of the current course structure. Overall, the learning experience statements that students agreed most with (with scores in the range 6.1-6.4 out of 7) are that: the assessment of the course was fair and honest, the students were able to get support if they needed it, the understanding of key concepts had high priority and that they understood what was expected to learn in order to obtain a certain grade. Another observation is that there were no notable differences in the answers when they were sorted per gender, type of student or disability.

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?

Among the three areas of the learning environment, comprehensibility (cognitive level) experience in particular scores high with 6 being the average agreement index for the statements from this group. The responses appear to be quite uniform for the groups of questions that deal with meaningfulness and manageability. The diagram also exhibits one larger and another smaller "dip" which reflect the students' view that, in comparison with other LEQ statements, they had less opportunities to influence the course activities (question 20) and learn by trying out their own ideas (question 3). Moreover, the students agreed to a lesser extent that they could explore the subject on their own and spend time on reflecting on what they have learned (question 18).

One explanation for the first issue (related to questions 20 and 3) could actually be extrapolated from the results of the course survey itself. From the high agreement indices in responses to questions 6-16, one may conclude that the students perceive EG2100 as a course with clear goals and good organization. The students also reported that the course provided many concrete examples that they could relate to which reinforced the understanding of the lectures. Sometimes, a clear guidance and well-defined structure may seem not to leave much space for the students to affect the course activities. Additionally, due to the analytical nature of the course, less freedom can be experienced while solving certain problems, since the solution is one and the number of applicable methods is limited. Such feedback is expected in basic theoretical courses that should serve as a foundation of an academic discipline, which is exactly the case for the Power System Analysis course. One could as well say that it is difficult to find an optimal balance between promoting exploration and own experience on one side and arranging a well-organized course with clear goals on the other side.

The second issue (the lack of time to reflect) is very much connected to the pace of the course and the amount of material that needs to be covered during a pre-specified number of lectures. There are means to increase the redundancy by allowing the students to strengthen their knowledge during, e.g., repetition and reflection sessions (one option would be to change the TA sessions/lecture ratio etc.). Nevertheless, the agreement scores in these weaker areas are still placed at the 3.5 average or higher in the LEQ polar diagram.

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?

Here we outline the best aspects of the course and advice for future course participants as reported by the students, while the suggestions for improvement are integrated with possible developmental solutions under the following heading. As the best aspects of the course, the survey respondents have listed:

• clearly defined structure, ILOs and examination guidelines;
• engaging, clear and well-prepared lectures and course material (the textbook and lecture notes) as well as the open attitude of the teachers;
• lectures with typical exam questions and assignments designed to both extensively cover the ILOs and practice report writing;
• helpful teaching assistants and TA tutorials.

When it comes to advice to future course participants, the students recommended to:

• start early with the assignments (since it sometimes takes time to find Matlab code errors) and take advantage of the tutorial sessions;
• follow the lectures regularly to understand the theory and assignments since "they really explain everything" and you "will get more than studying yourself";
• do the assignments with proper understanding, use the compendium (that contains "everything you need to know") and examples provided;
• be prepared to work both independently and with your friends.

PRIORITY COURSE DEVELOPMENT

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

Although the students were mostly satisfied with this year's examination system, in the survey feedback there were some remarks that the students spent a significant portion of (though useful) time on coding for the assignments, writing reports and learning to deal with formula and diagram editors. The reports were given P/F and the overall grade was earned in the written exam (while P in all four assignments was a pre-requisite to pass the whole course). Furthermore, both the project and the exam must be passed in the same academic year to successfully complete the course (i.e. the assignments were considered as a part of the written exam). This approach has resulted in challenges for double degree students who could stay at KTH only for one year.

As a solution to overcome these challenges, the proposal is to distribute 6 course credits between the project with 4 assignments (1.5 credits) and the written exam (4.5 credits), already during the next course offering. In that way, the double degree students would earn some course credits by passing either the assignments or the written exam, and by earning the remaining course credits in the following academic years, they will be able to successfully complete the course in an easier manner.

Another open discussion is about revising the dates for initial assignment deadlines and re-submission of the failed/missed assignments. Since the project will be an independent part of the course assessment/examination, the deadlines will be completely different in the next academic year.

Furthermore, some students have mentioned that there were too many TA sessions. Instead, they suggested that these sessions can be re-formulated such that they offer extra support for the students coming from a non-electrical-engineering background. Several respondents would prefer to devote more time to theoretical issues by slowing down the pace of the lectures. This course is a master course in electric power engineering and a solid background in electrical engineering and using MATLAB are requirements to take this course.

OTHER INFORMATION

Is there anything else you would like to add?

No.