

# Report - SH2612 - 2022-11-15

Respondents: 1  
Answer Count: 1  
Answer Frequency: 100.00%

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Please note that there is only one respondent to this form: the person that performs the course analysis.

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**Course analysis carried out by (name, e-mail):**

Weimin Ma, weimin@kth.se

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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.**

After the completion of all course activities (lectures, assignments and seminars), all students were asked to participate in the course evaluation by sending them the LEQ survey questionnaire. Within the processes of the course activities, the students were also encouraged to express their opinions on the arrangement of course activities and the contents of course lectures. The students' feedback on course projects were reflected in the seminars. However, only five students among 15 total students answered the LEQ survey questionnaire, and they are all international students.

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**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.)**

There were four meetings with all students held in the middle and the end of the course. Each meeting was three hours, with the main objective for students to report the progress of their course projects using the learnt outcomes from the course, and to receive feedback from the teacher. Meanwhile, their opinions on the course were also presented and reflected during the process of lectures. For instance, frequently I asked students for their suggestions and comments on the class activities and other matters related to the course. Individual meetings were also arranged for supervising the course projects.

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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.**

After learning the course of nuclear power safety, the students are expected to possess a basic understanding of the principles, issues and tools in nuclear power safety. More specifically, the students should be able to (i) Define safety design requirements and explain how they are achieved in design, construction and operation of a nuclear powerplant; (ii) Identify key milestones in accident progression scenarios (from design-basis accidents to severe core-melt accidents) and relate them to respective prevention and mitigation measures; and (iii) Perform a scoping assessment of a perceived threat against plant safety barriers using contemporary knowledge and methods in safety analysis. Learning-by-doing approach is employed to help achieve the intended learning outcomes, and therefore the course projects are conceived to address safety issues which may appear in different reactor designs. The intended learning outcomes are accomplished by 38 hours of classroom work (26 hours of lectures and 12 hours of seminars) and 120 hours of students' independent work (60 hours of reading the course materials, and 60 hours of working on course project). The final grading scale is A/B/C/D/E/FX/F, with the consideration of a student's performance in home assignment, project and final exam. The first change since last course offering is back to more classroom activities from previous offering of distant learning through Zoom webinar. The second change is that I had two course assistants who can help students with projects. The third change is that the course materials have been significantly updated from lessons and feedback from previous offering. The fourth change is to have a better description of course projects for their goals, scopes and expectations.

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**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?**

Yes, the total workload student is supposed to be 158 hours for this course.

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**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?**

I believe all students have reached the intended learning outcomes, manifested in their successful delivery of the assignments (homework, project and written exam). This time I had more in-class activities which required students to discuss specific topics which were just taught. The prompt feedback is useful for the adjustment/modification of coming lectures. To have more students' involvement in the lectures is something I learnt from the previous course offering, so I had a better idea of how well they can catch up and how much time they spent on the reading materials and project. The accomplishments of the course projects were at higher standard, and discussions and debates in the seminars were also more focused and intensified, due my coordination and more involvement in the progress of the projects.

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**STUDENTS' ANSWERS TO OPEN QUESTIONS**

**What does students say in response to the open questions?**

The responses are positive in general, and the students appreciate projects that help explore various aspects of safety in a particular reactor design. The students also give some suggestions such as: (1) moving the project to P4; (2) more discussion on defense-in-depth approach in projects; (3) more explanation of basic concepts such as dry and wet wells in BWRs; (4) assess to safety analysis tools for the projects; etc.

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**SUMMARY OF STUDENTS' OPINIONS**

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

All students who participated in the survey expressed that they worked with interesting issues. Five of 15 students who participated in the survey expressed that the course was challenging in a stimulating way. All students expressed that the assessment on the course was fair and honest. They also responded that they are able to learn by collaborating and discussing with others, and to get support if they needed.

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## **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.**

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Generally speaking, I am satisfactory with the offering and the students' results. The evaluation may be fair and honest, since only 1/3 of students participated in the survey, the outcomes may not be representative. However, suggestions from students are useful and instructive for the improvement of the next offering of the course. Since the last course offering, more in-class activities in most lectures have been emphasized. The students were divided into groups randomly who discussed the question given by the teacher in around 5 minutes, and then each group presented the answer. This way the students were more actively involved in the lectures, and the teacher got the prompt feedback on learning outcomes. A refined reading materials were given to the students, so to help students to further digest and comprehend the lecturing topics. These changes were implemented to boost to the students' learning outcomes.

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## **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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Yes, it is possible to identify stronger and weaker areas in the learning environment based on the information I have gathered during the evaluation and analysis process. There were no significant differences in experience between female and male students, and between international/national students. Again, some students did not spend enough time on the course, which were reflected in their performance in exam, course project, and home assignment. Actually, around 80% of questions in the home assignment and written have answers from the lecture handouts and reading assignments. This means if the students read through the handouts and reading assignments, they should be able to pass the examinations with good grades (A or B). However, it turned out that only a few students managed to reach those grades. This outcome may have nothing to do with the learning environment, but I would like to think of some solutions to improve it, including some change in learning environment which may help students to spend time on the course.

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## **PRIORITIZED COURSE DEVELOPMENT**

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

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The synthetic connections between literatures and the multidisciplinary contents of the course should be further developed. In long term it will be very helpful to develop a textbook which will not only summarize all key concepts, safety principals and methodologies (e.g., deterministic safety analysis), but also demonstrate their applications in safety case studies. In short term, course materials should be further refined so that students will not have difficulty to comprehend them. The format of course project also needs further changes. Although the projects were designed in a way to reach the intended learning outcomes through a learning-by-doing approach, it is hard to using the learning-by-doing approach in practice, since the students did not have access to safety analysis tools due to license constrains. The constraints should be taken into account in the design of future projects.

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## **OTHER INFORMATION**

**Is there anything else you would like to add?**

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No.

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