

# Report - SH2612 - 2023-11-21

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 course's completion all students were asked to participate in the course evaluation by sending them the LEQ survey questionnaire. During the process of course offering, frequently I as the examiner also asked students to express their opinions on the lectures and classroom activities. The students' opinions on course projects were reflected in the seminars. However, only six students among 22 total students answered the LEQ survey questionnaire. They are five female and one male, 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 six meetings with students held during the course offering and in the end of the course. Four meetings, three hours each, were mainly for students to report the progress of their course projects using the learnt outcomes from the course, and to receive feedbacks from the teachers. Two short meetings were held to supervise two student groups on their projects, per their requests. The opinions of students on lectures were also reflected during the process of lectures. For instance, due to the lack of interest in peer review on fellow students' projects, I cancelled peer-review activities on projects, although it was planned beforehand.

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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 mainly based on the final written exam, with a consideration of student's performance in quiz and project if the score of the exam is near the threshold of a critical grade (say, F). The first change since last course offering is to change a teacher (from Dr. Walter Villanueva to Dr. Andrei Komlev) for three lectures and increase one lecture for Prof. Sevostian Bechta. The second change is to simplify the course projects which are more doable during limited time (60 hours as the work load). The third change is to update course materials, classroom activities and the format of the final written (from open to close) to accommodate previous reflections.

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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 of each 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 (quiz, project and written exam). This time we had more students, a increase of around 57% compared with the previous course offering. However the distribution of grades is similar to the previous. So, statistically I do not see significant differences in students' results, compared with previous offerings.

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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. Here are a few responses from students: (1) the best aspect of the course was having three different teachers and three different ways of teaching and explaining the different or same aspect of nuclear power safety; (2) The orals for the project, we had the chance to have two orals on the same subject to improve our presentations; (3) the project was interesting and there was a lot of freedom to look into interesting topics; (4) having discussion in class was interesting, and the lectures were interesting, and packed with information; (5) ask for clarification on assignments early and often, and start with the project sooner, 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 and meetings expressed that they worked with interesting issues, and received supports and feedbacks. Among six students who participated in the survey, five expressed the course was challenging in a stimulating way, six said they were able to practice and receive feedback without being graded, five replied that the assessment on the course was fair and honest, six expressed that they were able to learn by collaborating and discussing with others, and to get support if they needed. Therefore, the students' opinions were quite good, although one may point out that only six of 22 students participated in the course survey. From the meetings where most students were available, I also received a warm feeling of students' opinions.

**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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Overall, as the examiner, I am happy with this offering in relation to students' results. The students has learnt how to look at different safety issues and find approaches to address them. As mentioned above, if the course evaluation is only based on the questionnaire, it may be insufficient statistically, since only 6/22 of students participated in the survey. However, opinions expressed in meetings may be more representative. Since the last course offering, classroom activities have been more interactive, and it seemed that students were attracted to their engagement of classroom activities. The refined course materials from all teachers were also beneficial 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, similar to previous course offerings, 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, between international/national students, and between students with/without disabilities.

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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 multidisciplinary contents of the course make it a bit difficult for some students to follow the lectures and to do the projects, especially if the students was not educated in the subject of nuclear science and engineering previously. Moreover, learning-by-doing will be superficial if we do not have safety analysis tools which can be used in the course projects. The thing is that international students are not allowed to use the safety analysis tools we acquired, due to prohibitions of licenses or non-disclosure agreements of data. In short term would like to find a replacement of safety analysis tools. Moreover, the course projects should also be re-designed or newly conceived to reflect the new calculation/ simulation capabilities, without sacrifice of intended learning outcomes. In long term, I plan to develop a textbook which will not only summarize all key concepts, safety principals and methodologies (e.g., deterministic safety analysis, probabilistic safety analysis), but also demonstrate their applications in safety case studies.

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**OTHER INFORMATION**

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

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