

Course Analysis – SH2702 Spring 2023

Course analysis carried out by:

Pavel Kudinov, pkudinov@kth.se

1. 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.

All students are invited to participate in the course evaluation using the Learning Experience Questionnaire (LEQ). During the course, the students were regularly invited to express their concerns or questions by any means including arranging a meeting. At the end of the last seminar, students and teachers are asked to discuss the course, which constitutes the course meeting. Aspects regarding gender and disabled students are investigated in the dedicated LEQ questions.

2. DESCRIPTION OF MEETINGS WITH STUDENTS

Describe which meetings that have been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)

Students were invited to request meetings (see above) and a few took the opportunity. Out of 32 registered students, 8 participated in LEQ.

3. COURSE DESIGN

Describe briefly the course design, the constructive alignment (intended learning objectives, learning activities, assessment, and how they interact), and the development that has been implemented since last course offering.

Intended learning outcomes this year were reformulated (to achieve a better alignment between ILOs and course learning activities) as follows: after completion of the present course, students will be able to:

ILO1: Define key elements of the nuclear power plant design and safety features,

ILO2: Explain the principles of nuclear reactor operation and control,

ILO3: Develop simplified design and perform analysis of (a) nuclear reactor core, (b) primary systems, (c) balance of plant.

ILO4: Reflect on nuclear core design constraints in terms of limiting important operating parameters such as (a) Critical Heat Flux (CHF), (b) maximum cladding and fuel pellet temperature.

The course is based on three main learning activities

- Home reading of the course handbook (to support achievement of ILO1-4)
- Lectures (that go in depth for some selected topics) (to support achievement of ILO1-4)
- Exercises solved by students (to support achievement of ILO3 - 4)
- Project work and oral presentations given by students (to achieve ILO1 - 4)
- Peer review of the project (to achieve ILO1 - 4)
- Final written exam (to assess achievement of ILO1-3)

Assessment and grading:

1) Project has now 70% contribution to the final grade.

2) Peer review is now both formative (for the students that receive peer reviews and should provide necessary changes in the final report) and summative (quality of the peer review is now

graded and students can get extra points for writing a review with constructive suggestions on improvement of the draft project report). The form for the peer review is now focusing on the assessment of evidence of students achieving ILOs of the course.

Course schedule:

The first seminar to present student progress is moved earlier in the schedule to incentivize earlier start of the project work.

4. 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

The total workload of the course reported by students is still on average below the expected level for 8 hskp, but has increased on average since the last time. At the same time, the students reported that there was "a lot of work load after classes, but it was challenging and interesting" and that "course was extremely hectic. I didn't get enough time to concentrate on anything else". Also, some students admitted that they were "really not sure about the numbers".

5. 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?

2021: 21 students	1A (4.8%)	12B (57%)	6C (28.6%)	2D (9.5%)	
2022: 15 students	4A (26.6%)	7B (46.6%)	4C (26.6%)		
2023: 32 students	3A (9.4%)	23B (71.9%)	3C (9.4%)	2D(6.2%)	1E(3.1%)

Overall, the results noticeably improved from the last year, yet, there was very significant change in the sample size (more than twice increase of students compared to 2022) Compared to 2021 the results have also improved with a larger fraction of Bs.

6. STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

Overall, there were no major issues raised.

Best aspect of the course:

"The tasks 4,5 and 6. It enabled me to really gather the knowledges acquired during the course and use them in a concrete way."

"Working on my own project, implementing physical phenomena"

"The best aspect was to do a concrete analysis."

"The presentations of each group was fun to see."

"The group project focused in one single reactor model helped me to understand it deeper than I thought I could."

"Quite complete and allowed me to learn a lot of different concepts"

"The project is the best aspect of the course, it allows you to really think about a certain kind of reactor and search for information on your own to find the useful data. The searching part could be long and hard but at the end it is helpful."

What would you suggest to improve?

"I would suggest better organization of the exams, and honestly I see no point in giving random fact questions about different reactors (you lookup this info in real life) The second part of the exam was nice, I was able to think about the tasks, not guess."

“The theory question could be more logical than memory test. The project work was too hectic, I would just stretch the course out in two periods”

“It could be good to have a Graded return after each presentation”

“Maybe there should be more credits in the project and less in the exam”

“Examination minimum pass grade was 5/10, which made some of my classmates fail even though they did really well in the project.”

“During the presentation the teachers was not always trying to understand our way of thinking, this could be an improvement to do, also they did not have the correct values that we should found during the project which made it difficult for us to make sure that we were correct. Also the order of presentation was always the same, thus the first group was always the first to present which was not really fair because our feedbacks serve the others groups that were presenting later on the week and they could correct their answers giving our feedbacks”

What advice would you like to give to future participants:

“Do not go to this course as a first nuclear course, the workload would be too important.”

“Please ask as many questions as possible, the project work can be really confusing. The exam dives into detailed questions about each reactors (in the theory section), do remember all the numbers.”

“Be ready to spend some time on the project”

“Listen to other groups presentations so that you can better understand how different reactor designs work.”

“They should be involve in the project during all the period to run out of time.”

Is there anything else you would like to add? (I belonged to: Grupp 1)

“I really enjoyed this course, and it was really nice to have such quick feedbacks during the exercise sessions.”

7. SUMMARY OF STUDENTS' OPINIONS

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

Overall, the outcome of the questionnaire seems to be quite positive.

Students feel that they worked with interesting issues, had the opportunity to explore the subject on their own, try their own ideas.

The course is considered challenging in a stimulating way.

Students felt “togetherness” with others in the course.

The students reported an open and inclusive atmosphere on the course.

The vast majority found that the ILOs helped them to understand what they were expected to achieve.

The course was organized in a way that supported students learning.

The students were able to learn from concrete examples that they could relate to.

The course activities are considered as helpful in achieving the intended learning outcomes efficiently.

Most of the students report that they could practice and receive feedback without being graded.

The assessment on the course was fair and honest according to students.

Only one student reported that background knowledge was not sufficient to follow the course.

The course provided students with an opportunity to learn in different ways and to regularly reflect on what was learnt.

A mixed response was to the question about opportunities to influence the course activities.

The students were able to learn by collaborating and discussing with others and were able to get support if needed.

8. 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.

Overall, the teachers are quite enthusiastic to see that the students like the course, succeed in achieving ILOs and are able to get good grades.

The changes that were made in the course format, assignments, assessment and grading seem to work out well.

The most encouraging response from the student is "The group project focused in one single reactor model helped me to understand it deeper than I thought I could."

Yet, there might be some space for further improvement according to the students' feedback to the open questions.

9. ANALYSIS OF THE LEARNING ENVIRONMENT

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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There are no indications that learning experience is affected by such factors as gender, ethnicity, disabilities etc.

The students like the project work most of all and report learning from it the most.

Exam arrangement is still liked less compared to the Project and might be a subject for further improvements.

10. PRIORITIZED COURSE DEVELOPMENT

What aspects of the course should be developed primarily?

How can these aspects be developed in short and long term?

I see a couple of main opportunities for further improvement:

- 1) Schedule for the Project seminars and number of people per group. The number of students has increased (doubled). The amount of time needed for the presentations of the groups should be adequate to give detailed feedback. It is likely that the number of students will remain high and might even increase further. In the current design with 3 students per group, the number of groups is too large with respect to the time that we have in the seminars. We will need to rebalance it in the next round.
- 2) Exam format and content. By design, the exam is addressing ILOs 1-3 and is aligned with the lectures and excesses. However, the students like Project more (maybe, to some extent, as more exciting part where they work together) than the exam part (where they have to show individual knowledge and more "trivial" *declarative* and some *functioning* knowledge in terms of SOLO taxonomy (Biggs & Tang p.79)). We keep discussing how exactly the situation can be rebalanced though. Abolishing the final exam completely (as one of the options) might be a too radical solution.

11. OTHER INFORMATION

Is there anything else you would like to add?

No