# Course Analysis – SH2702 Spring 2022

**Course analysis carried out by:**

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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 opinions on the arrangement of course by any convenient means including email or arranging a meeting. At the end of the last seminar, students and teachers are asked to discuss the course, which constituted 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 16 registered students 12 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 are formulated as follows: after completion of the present course, students will be able to:
   ILO1: Perform a simple design and analysis of a nuclear reactor core.
   ILO2: Perform a simple design and analysis of primary systems in nuclear power plants.
   ILO3: Perform a simple design and analysis of the balance of plant.
   ILO4: Explain the principles of nuclear reactor operation and control.
   ILO5: Reflect on nuclear core design constraints in terms of limiting important operating parameters.

   The course is based on three main learning activities
   - Home reading of the course handbook. (to achieve ILO4 and support achievement of ILO1-3 and ILO5)
   - Lectures (that go in depth for some selected topics) (to achieve ILO4 and support achievement of ILO1-3 and ILO5)
   - Exercises (that aim to provide students with an opportunity to practice in solving problems needed for the group Project work) (to achieve ILO1-3)
   - Group Project (a significant part of the course where students learn to carry out calculations for selected design of a nuclear reactor) with student groups presentations of results during seminars and in the final report. (to achieve and assess ILO1-5)
   - Final written exam. (to assess ILO1-4)

   It is the first time that I am responsible for the course. Corse coordinator is Prof. Henryk Anglart, who have been teaching this course for many years, but will retire next year. Therefore, this

time we mainly followed the original course design to assess what works and what can be improved.

## 4. STUDENTS' WORKLOAD
**Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If these is a significant deviation from the expected, what can be the reason**

The total workload of the course is reported by students as generally below the expected level of 8 hskp. At the same time, the students consider that the course is qualitatively quite intensive and takes significant time.

## 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?**

In 2021 21 students results: 1A (4.8%)   12B (57%)   6C (28.6%)   2D (9.5%)
In 2022 15 students results: 4A (26.6%)   7B (46.6%)   4C (26.6%)

Overall, the results slightly improved, but that can be attributed to the significant change in the sample size (40% smaller number in 2022).

## 6. STUDENTS´ANSWERS TO OPEN QUESTIONS
**What does students say in response to the open questions?**

Overall, there were no major problems raised.

The students overall express their enjoyment of the project work, calculations, group work, lectures in person.

The students would like to see improvements in the peer review system, balance between exam and the project, and stronger connection between exercises and the project work.

Students also would like to see more support for the project work, provide more information about the exam in advance.

From their experience, students recommend to the future to start the project work as early as possible as it is quite time-consuming.

## 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 understand the course organization and what they are expected to do, and actual content of the course met their expectations.

Classroom activities on average are considered as helpful, but out-of-classroom activities are considered as (on average) more helpful in reaching the course objectives.

All students considered that they were treated fairly during the course, social environment was inclusive, regardless of gender, gender identity, ethnicity, religion, disability, sexual orientation or age. All but one student considered that grading was also fair.

The course activities were overall considered as motivating to study during the whole course.

## 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 happy to see that students liked the course and succeeded in achieving ILOs and getting good grades. The course format and content were quite stable for the last years, and it seems that it works reasonably well according to the student feedback and results.

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?**

There are clearly no indications that learning experience is affected by such factors as gender, ethnicity, disabilities etc.
There is more favorable attitude from the students regarding off-classroom project work, but also indications that not everyone started project work as early as was suggested by the course teachers. Peer review was also mentioned as not very efficient, which is a sign that it needs more work to implement it more effectively.

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 few main areas for further improvement:
1) Constructive alignment between ILOs and activities
While course learning activities are quite well designed, the ILOs are written using "technical" goals of the discipline in mind, rather than what activities students are expected to perform and learn from. This mismatch, although a minor one, creates some potential ambiguities for the next area of improvement (see below). I plan to change the formulation of ILOs to be more aligned with the student learning activities.
2) Assessment (formative and summative) and grading.
2.1) Currently the Project and final exam are contributing to the final grade in 50/50 proportion. This doesn't seem to correspond to the actual importance and contribution of the Project to the student learning experience.
2.2) Peer review. Currently peer review is done by students assigning grades to their peers presentations and reports based on factors such as "Problem definition", "Analysis and argumentation", "Structure and writing" etc., which are important, but there is no mentioning of the course ILOs in the peer review process. Also, the quality of the peer review itself is not graded. This creates rather a lax attitude from the students who tend to give only positive reviews. There is a missed opportunity to remind both the reviews and the reviewed about the actual ILOs of the course and refocus their attention on those.
3) Student work distribution over the course
Currently all lectures and exercises are given first, and then all seminars where students present their work are carried out. This creates a small potential lag with the student start of the project work. Moving first seminar to an earlier date should give students better incentive to start early. Mixing of seminars and some lectures towards the end of the course should also give students more time to work on comments on their project presentations that they receive during the seminars. Replacement of one or two lectures with seminars might be also a good idea in order to give more time for feedback to the students work.

**11. OTHER INFORMATION**

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

No