Report - SG1120 - 2021-04-09

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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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.

The course is on basic Mechanics, a general introduction to methods from physics and engineering for the first year of engineering students. We typically have three sessions of 2 hours per week: two of them are theory lessons (föreläsning) and the third one is a practical session. There are three types of practical sessions:
- Problem solving (övning): here the teacher solves different problems on the board, and the students are given the chance to participate, ask questions and interact with each other to contribute towards the problem solution.
- Seminar (seminarium): here the students prepare problem solutions before the class and submit them online. Then they can present those solutions in teams, in front of the class, and the teacher asks questions about the solution process, as well as interpretation of the results. The submitted solutions and presentations are evaluated by the teacher, and the students get a Pass/Fail grade which corresponds to 1.5 hp out of the total of 9 from the course. This is a necessary condition to pass the course.
- Workshop: here the students have the opportunity to work on previous exams and sample problems, individually or in groups, and they can ask questions and discuss with the teacher. The evaluation consists of three parts: seminars (1.5 hp), theory (3 hp) and problems (4.5 hp). In addition to the seminars described above, the other two parts of the evaluation are carried out as follows:
- Theory (teoridel): there are two partial exams (kontrollskrivning) during the course, which the students can take in order to complete the theory
part of their grade. If they reach a minimum grade (6/16) they pass this part of the evaluation. If not, they need to solve a theory part of the final exam (tenta). They are free to anyway solve the theory part of the final exam in order to increase their theory grade (the highest of the theory grades will be given to the student).
- Final exam (tenta: teoridel och problemdel): as stated above, the students are free to solve the theory part of the final exam to compensate or increase their theory grade. Additionally, the final exam includes 4 problems to be solved by the students. This is the problems part of the exam,
which constitutes 4.5 out of the 9 credits in the course.

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.)

During the semester we had one meeting with the student representatives and the program director. In the meeting, as well as in the course evaluations, the students stated that they were very satisfied with the course and the teacher. They also pointed out some difficulties associated to the distance learning due to COVID-19, which were improved when providing recordings of the lectures. Also, the course organization needs to be updated, so the course is delivered with 1.5 hp in P2 and 7.5 hp in P3.

COURSE DESIGN

Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.

The course design is described above. There were three main differences with respect to the first time I gave this course:
1) The course material and notes has been streamlined, focusing on the most relevant aspects and improving the structure of the notes.
2) I designed a number of instances for peer instruction and active learning throughout the course.
3) I provided the possibility of using blended learning, through and augmented-reality framework, to better explain the concept of "torque".
4) We had all the lecture recordings available.

THE 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?

This course has a total of 9 credits, equivalent to 240 h of work. Based on the answers from the students, the majority of them are within 10-12 h of
work per week approximately including the lectures. There are 13 weeks of lectures, plus a couple of weeks without lectures for them to prepare exercises and another week before the final exams, so one can estimate a total of 16 weeks. This means that, in order to reach the 240 hours, they would need to work around 15 h per week, which is above what they are currently spending. This is an interesting observation, and it essentially highlights that we need to convey, in a better way, that they need to spend time on their own working on problem solving and asking questions when they do not understand certain concepts.

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 the students who took the final exam, around 80% passed the course. The percentage is along the lines of what is obtained in the Mechanical
Engineering and Vehicle Engineering programs. Around one third of the students (33%) pass the course with a D or an E; then 23% obtained a C, 17% a B and 7% an A. Compared to previous years, the percentage of students who passed the exam is higher, which suggests that having the recordings available may have helped to prepare the exams. Also, the percentage of students with an A has increased from 5% to 7% this year, which is a significant fraction of the class. Overall, the results can be considered as being within the normal bounds of what is observed in this course.

STUDENTS´ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

The students had positive comments towards the course responsible, and greatly enjoyed the lectures. They also acknowledge the difficulty of the course, but they could get good answers to their questions, and the course material was properly organized. The comments regarding the quality of the material (raised in previous years) are not there anymore, which implies that the new streamlined material, together with the augmented-reality framework, have positively contributed towards improving the course. There were some comments regarding the course organization, which will be modified next year.

SUMMARY OF STUDENTS' OPINIONS

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

- The students really appreciated the work of the course responsible, and the lectures.
- They acknowledge the difficulty of the course, and the amount of time needed to pass it.
- The course material is found to be useful.
- Some suggestions for the övningar and the seminars are noted.
- The recordings helped.
- The course structure needs to be improved.

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.

Many students thought that they worked with interesting problems and examples, although regarding the difficulty there is a split: whereas some think that the difficulty was acceptable, some others found the course hard. It is also important to highlight that some of the students stating that the course was difficult spent fewer hours than necessary to complete the 9 hp. Most of the students had very positive comments towards the course responsible, and highlighted that he was helpful and made the course more meaningful.

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?

It appears that the stronger areas are related to the meaningful examples and the activities for
collaboration as well as to get support.
On the negative side, one should probably spend more time providing support for the problems and reformulating some of the aspects that appear to be more difficult for the students. The course organization needs to be improved.

PRIORITIZED COURSE DEVELOPMENT

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

A good strategy would be to have more workshops/interactive sessions, and that could be developed in the short term (note that there were some limitations in this regard due to COVID-19). One could probably
have just 2 seminars and 3 workshops, and go deeper into some of the problem-solving strategies. Perhaps also some of the övningar can be split, so in one group the instructor solves the problems, whereas in the other one the students take a more active role. Furthermore, some ideas related to active learning could be added, such as questionnaires related to audiovisual material or additional reading activities for discussion. I will work more on blended learning and augmented-reality frameworks.
I will try to keep the recordings when going back to normal lecturing, and I will improve the course structure,