Report - SG1102 - 2020-06-30

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 was evaluated as it follows:
1) By participating to the meetings with the student representatives as part of the Energy and Environment (CENMIs) preparatory and follow-up meetings (so-called “link-meetings”);
2) A LEQ survey is conducted after examination. The LEQ survey is open for 3 weeks after examination. The response rate on the LEQ survey was 20% (VT2020).

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.)

Energy and Environment (CENMIs) programme-wide meetings (23/08/2019).
Tasks: introduce the SG1102-“Mechanics I” course (main content, prerequisites, industrial applications, course format, pedagogical methods, examination, literature) to the first year students and to the fellow faculty active in parallel courses within CENMIs programme. Last meeting: 23 /08/2019, KTH. Coordinators: Hans Havtun (Program Director, Energy and Environment BSc and MSc program, hans.havtun@energy.kth.se), Karina Nielsen (karina@admin.kth.se), Paiman Parosh (paiman@kth.se).

Energy and Environment (CENMIs) preparatory and follow-up meetings (so-called “link-meetings”) with the student representatives and fellow faculty during the Spring Semester (usually two meetings/teaching period). Last meeting: 04/02/2019, KTH.
Responsible teachers from all parallel courses coordinate with each other and in consultation with the student representatives on how the course activities are distributed during the semester.
Moreover, during the “link-meetings” feedback from the students is received with respect to the course activities including lectures, teaching method, exercise sessions and the mid-term examinations.
Coordinators: Hans Havtun (Program Director, Energy and Environment BSc and MSc program, hans.havtun@energy.kth.se), Karina Nielsen (karina@admin.kth.se), Paiman Parosh (paiman@kth.se)

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

Föreläsningar
15 x 2h
Föreläsningarna i kursen är organiserade enligt undervisningsmetoden Peer Instruction (kamratlärande på svenska).
- It has been emphasized to the students the importance of reading the course material prior to the lecture. The sections in the book recommended to be read by the students are specified in the course program. The peer-instruction based lectures were complemented with an

overview on the theory to refresh the information already read by the students prior to the lectures. Moreover, concrete examples were given and problems/exercises were resolved in the classroom. Lecture notes were provided on the course's website. Particular exercises from the course book were suggested as homework to the students for complementing the course material discussed in the class-room.
Expected students' workload level: 160 hours over 9 weeks (15-17 hours of studying/week)
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Övningar
7 x 2h
Rekommenderade strategi: Inför övningarna så delas hela klassen in i två övningsgrupper. Övningarna leds av en övningsledare. Övningsledaren inleder oftast övningen med att räkna igenom en uppgift vid tavlan så att studenterna blir bekanta med hur man kan lösa en uppgift. Resten av övningen så sitter studenterna och löser rekommenderade uppgifter enskilt eller i grupp och två-tre personer. Övningsledaren går då runt i övningssalen och hjälper studenter med att lösa uppgifterna.
Vid övningarna tränar studenterna att på egen hand lösa uppgifter av den typen som kommer på problemdelen på tentamen. Ett aktivt deltagande på övningarna ökar därmed chanserna att klara problemdelen.

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Examination: Inlämningsuppgifter (INL1 & INL2, 1.5 hp)
Dessa är obligatoriska och godkända inlämningsuppgifter ger 1,5 kurspoäng.
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Examination: Teoritentamen/ 2 Kontrollskrivningar KS1 & KS2 (TENB, 1.5 hp)
Sluttentamen består av två delar: en ”teoridel” (TENB) och en ”problemdel” (TENC). ”Teoridelen” examinerar studenternas konceptuella förståelse av mekanik och kan examineras innan sluttentamen genom kontrollskrivningar (KS:ar). Även om studenten har klarat ”teoridelen” på tentamen genom KS:arna så har studenten rätt att skriva den delen på sluttentamen för att kunna förbättra sitt resultat. Det gynnsammaste resultatet är det som räknas för slutbetyget.
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Examination: Tentamen (TENC, 3.0 hp)
Sluttentamen innehåller en problemdel där studentens förmåga att individuellt lösa mekanikproblem examineras.
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Changes from the last course offering.

- With support from KTH IT (Krzysztof Starzecki, E-Learning Systems & Solutions Specialist, krzsta@kth.se), I implemented multiple-choice questions/quizzes in Canvas learning management system for SG1102 course. (Nov. 2019)
- The SG1102 students have now the possibility to practice on-line tests/quizzes based on multiple-choice questions using the Canvas platform and thus dedicate more time on task. Moreover, this stimulates continuous learning during the course.

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?

SG1102 kurs, 6 hp
Expected students' workload level: 160 hours over 9 weeks (15-17 hours of studying/week)
Antal respondenter: 100
Antal svar: 20
Svarsfrekvens: 20%

18-23 hours/week

VT17 / VT18 / VT19 / VT20
20.0% / 7.4% / 11.5% / 11.2%

15-17 hours/week

VT17 / VT18 / VT19 / VT20
11.4% / 11.1% / 19.2% / 11.1%

12-14 hours/week

VT17 / VT18 / VT19 / VT20
11,4% / 7.4% / 19.2% / 0%

9-11 hours /week

VT17 / VT18 / VT19 / VT20
20,0% / 40.7% / 23.1% / 22.2%

6-8 hours /week

VT17 / VT18 / VT19 / VT20
14,3% / 22.2% / 23.1% / 33.3%

bellow 5 hours /week

VT17 / VT18 / VT19 / VT20
14,3% / 11.1% / 3.8% / 16.7%

27.4% of the students participating in the poll worked more than 15 hours per week during VT2020 (30.7% work more than 15 hours/week during VT2019)

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?

Grade distribution A-E (67 out of 80 first-time registered students that took the exam):

Grade distribution [%, number]
A (3.75%, 3)
B (28.7%, 23)
C (27.5%, 22)
D (22.5%, 18)
E (1.2%, 1)

No significant differences as compared with previous course offerings. Approximately 83% of first-time registered students had grades between (A-E).

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

Bellow are a few answers from the students to the open questions:

What was the best aspect of the course?

- Dubbla försök med KS och teoridel på tenta. Man kan välja att långsamt beta av eller ta allt senare, flexibelt.

- Det är faktiskt kul att lära sig om mekanik och kunna använda mekanik för att förstå, simulera och beräkna olika realistiska scenarion. Synd bara att det var sista veckan innan tentan som jag faktiskt insåg detta när jag pluggade för fullt.

- Det fanns många tillfällen att visa sin kunskap och därmed pluggade man kontinuerligt
- Upplägget av att läsa innan föreläsning och gå igenom boken, kapitel för kapitel. Det gjorde det enkelt att hänga med och förstå vad man måste kunna.
- Att det gavs ks:ar och inlämningsuppgifter som förberedde en

- Tyckte om föreläsningar och frågorna som ställdes under föreläsningen.
- Boken, quizen och upplägget med ks.

- Tycker kursen har haft ett bra upplägg för kontinuerligt lärande. Peer instruction-frågorna, inlämningsuppgifter, KS och övningar har alla bidragit.

- Boken, den var tydlig och gav bra exemplar.

- Inlämningsuppgifterna var väldigt givande och övningarna med.

What advice would you like to give to future participants?

- Läs på innan, följ upp hemma, var i fas. Läs inte allt för första gången veckan innan tentan. Det går, men är absolut inte optimalt. Var noga med formler och siffror.

- Ta hjälp av varandra och diskutera olika uppgifter. Det gjorde att jag fick en bättre förståelse för hur man ska ta sig an olika problem.

- Börja läsa tidigt och börja jobba med frågorna i boken på dag 1.

- Gör quiz, ks och läs boken.

- Lägg tid på att läsa rekommenderade sidor inför varje föreläsning. Hjälper sjukt mycket!

- Lägg tid på att förstå grunderna. Om man försöker hinna ikapp med modulerna och inte riktigt förstår vad man gör kommer detta påverkar när

du pluggar till tentan.

- Ge inte upp och träna mycket, då blir det lättare senare i kursen. Även om du inte förstår allt i början så förstår man bättre senare när man får praktiska exempel.

- plugga på!

SUMMARY OF STUDENTS' OPINIONS
Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

The overall impression in terms of students' experience is that they were working with interesting issues and that they explored parts of the subjects on their own. They were active outside of the class room (spending time on task). They found the course challenging in a stimulating way (75% of those which answered to the evaluation). The students felt togetherness with the other colleagues, often working in groups outside of the class room scheduled activities. The atmosphere on the course was open and inclusive.

The students felt that the intended learning outcomes (ILOs) helped them to understand what they are expected to achieve and that the course was organized in a way that supported their learning. 85% of the students participating in the course analysis considered that they were able to learn from concrete examples that they could relate to. They felt that understanding of key concepts had high priority with 80% of the students indicating this in the course evaluation.

Most of students felt that the course activities helped them to achieve the ILOs efficiently and they understood what has been expected to learn in order to obtain a certain grade. The students felt that they could practice and receive feedback without being graded and that the assessment on the course was fair and honest.

75% of the students answering to the questionnaire felt that their background knowledge was sufficient to follow the course. They considered that the course activities enabled them to learn in different ways. Most important, they were able to learn by collaborating and discussing with their peers, thanks to the peer-instruction based lectures.

Most of students participating in the course evaluation considered that they were able to learn by collaborating and discussing with others.

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.

The students seemed generally satisfied with the course and managed to complete the elements that were included.
The problem exam is usually the most difficult to handle, and it was clear this year as well.
The quizzes on Canvas were a popular and fun element in the course, but unfortunately did not help with the problem exam.
The materials available through Canvas were appreciated.

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?

Strongest areas:
- The students are working with interesting issues
- They explored parts of the subjects on their own at home and they felt togetherness with the other colleagues.
- They were able to learn from concrete examples that they could relate to.
- They felt that understanding of key concepts had high priority.
- They understood what they were expected to learn in order to obtain a certain grade.
- They could practice and receive feedback without being graded thanks to the peer-instruction questions, the CANVAS quizzes (implemented for the first time during VT2020) and problems analysed during the lectures and exercise sessions.
- The atmosphere on the course was open and inclusive.
- The assessment on the course was fair and honest.
- Their background knowledge was sufficient to follow the course.
- The course activities enabled them to learn in different ways.
- The students were able to learn by collaborating and discussing with their peers.

Weaker areas:
- Not all students felt that they were able to learn by trying out their own ideas. Also, most of them considered that they didn't had opportunities to influence the course activities. One has to note that the course activities are designed before the course starts based on the previous experience and feedback received using previous course evaluations, as well as that received during the organized meetings with the student representatives and the Program responsible (PA).
- No significant differences in the reported experiences were observed for the students identified as female or male. Unfortunately, I was not able to see inputs from other groups.

PRIORITIZED COURSE DEVELOPMENT

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

Multiple-choice questions/quizzes were implemented in Canvas learning management system for SG1102 course using Möbius during the month of November 2019. During VT2020 the students had the possibility of taking on-line tests and quizzes in CANVAS, after each book chapter addressed during the lectures. The students dedicating more time on task in this way. Moreover, the students seem to like them, and think it helps follow the course continuously. On the other hand, quizzes can provide false security because they do not help with problem solving but only theory.

I believes that there should be a connection between having done all the assignments and passing the problem exam. I therefore think that one should change some quizzes so that are incorporating problem-solving elements.

There is a possibility (due to the current pandemic) that the SG1102 teaching in 2021 will be given as on-line distance learning. Thus, we will have to be prepared for such a scenario, use the experience gained during VT2020 & VT2021 and have exercise sessions and lectures properly designed to maximize the level of interactivity.