Report - SG1102 - 2021-10-20

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 by participating to the meetings with the student representatives (two meetings) and through the LEQ survey conducted after the examination (period 3). The LEQ survey is open for 3 weeks after examination. The response rate on the LEQ survey was 21.24% (VT2021), slightly higher (1.2%) than 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 (21/08/2020-digital Zoom due to pandemic).
Tasks: introduce the SG1102-“Mechanics I/Mekanik Mindre Kurs” (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: 21/08/2020, KTH. Coordinators: Patrik Hilber (Program Director, Energy and Environment BSc and MSc program, hilber@kth.se) ,
Karina Nielsen (karina@admin.kth.se), Paiman Parosh (paiman@kth.se), Theresia Lind (therlind@kth.se).

Energy and Environment (CENMIs) preparatory and follow-up meetings (so-called “link-meetings/länkmöter”) with the student representatives and fellow faculty during the Spring Semester (usually two meetings/teaching period). Last meeting: 09/02/2021, KTH (digital, via Zoom). 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. The student representative gather information from fellow students also via social media platforms (for example Facebook).
Coordinators: Patrik Hilber (Program Director, Energy and Environment BSc and MSc program, hilber@kth.se),
Karina Nielsen (karina@admin.kth.se), Linda Larsson (linda.larsson@kth.se).

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

The entire course have been given on-line using Zoom platform due to the Covid-19 pandemic.
The expected students' workload level is 160 hours over 9 weeks (15-17 hours of studying/week).

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Lectures/Föreläsningar (via Zoom)
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 and with examples were problems/exercises were resolved. 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.
- The peer-instruction based lectures were given digital, using Zoom. Break-out rooms were generated to create an environment for students to interact, discuss, and analyze the questions (multiple choice) posed during the lecture.
- The exercise sessions were offered via Zoom. The recorded exercise sessions were available to the students after each exercise session.
- Pre-recorded lectures from N. Apazidis were provided to the students via Canvas to complement the peer-instruction based lectures. The recommendation has been to visualize them before the peer-instruction based lectures.

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Exercise sessions/Övningar (via Zoom)
7 x 2h
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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Practice quizzes on Canvas
- Multiple-choice questions/quizzes in Canvas learning management system are implemented for SG1102 (since VT20). A quiz corresponding to a particular chapter is made public after that chapter is covered during the lectures. No grades are given. This allow SG1102 students 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.

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Examination: Inlämningsuppgifter (INL1 & INL2, 1.5 hp)
- Dessa är obligatoriska och godkända inlämningsuppgifter ger 1,5 kurspoäng.
- INL1 & INL2 were submitted by students on Canvas and corrected by examiner using SpeedGrader function for a rapid feedback to the students.

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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: Problemdel, 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 are summarize below.

- The entire course was offered Digital (via Zoom) due to the Covid-19 pandemic.
- The course materials (presentations) were adapted for this purpose.
- The peer-instruction based lectures were given digital, using Zoom. Break-out rooms were generated to create an environment for students to interact, discuss, and analyze each peer-instruction question.
- The exercise sessions were offered via Zoom. The recorded exercise sessions were available to the students after each exercise session.
- Pre-recorded lectures (not peer-instruction based) were provided to the students via Canvas to complement the peer-instruction based lectures. The recommendation has been to visualize each of them before the peer-instruction based lectures.
- INL1 & INL2 were submitted by students on Canvas and corrected by examiner using SpeedGrader function for a rapid feedback to the students.
- TENB: KS1 & KS2: Quizzes on Canvas; multiple-choice questions; answers automatically corrected in Canvas (with direct feedback to students)
- TENC: corrected by examiner using SpeedGrader function for a rapid feedback to the students.

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: 113
Antal svar: 24
Svarsfrekvens: 21.24%

18-23 hours/week

VT17 / VT18 / VT19 / VT20 / VT21
20.0% / 7.4% / 11.5% / 11.2% / 16.6%

15-17 hours/week

VT17 / VT18 / VT19 / VT20 / VT21
11.4% / 11.1% / 19.2% / 11.1% / 8.3%

12-14 hours/week

VT17 / VT18 / VT19 / VT20 / VT21
11,4% / 7.4% / 19.2% / 0% / 25%

9-11 hours /week

VT17 / VT18 / VT19 / VT20 / VT21
20,0% / 40.7% / 23.1% / 22.2% / 29.2%

6-8 hours /week

VT17 / VT18 / VT19 / VT20 / VT21
14,3% / 22.2% / 23.1% / 33.3% / 12.5%

bellow 5 hours /week

VT17 / VT18 / VT19 / VT20 / VT21
14,3% / 11.1% / 3.8% / 16.7% / 8.4%

24.5% of the students participating in the poll worked more than 15 hours per week during VT21 slightly more than VT20 (22.3% work more than 15 hours/week during VT2020)

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?

The results are in line with what was expected. Note that the summary of results below is not including the re-examination session.

Approximately 94% of students that participated in the period 3 examination had grades between (A-E) for the theory part.
Approximately 73% of students that participated in the period 3 examination had grades between (A-E) for the problem part.

However, there is a slight decrease in the number of first-time registered students that obtained grades between A-E as compared with VT2020. For VT2021 the course have been offered Digital, via Zoom. This was the major difference as compared with the previous course offerings.

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

Below are some of the students responses to the open questions.

On average, how many hours/week did you work with the course (including scheduled hours)?
- I worked: 0-2 timmar/vecka; Jag misslyckades med kursen och Fick F i betyg som följd.
- I worked: 9-11 timmar/vecka; Bra upplägg tycker jag med föreläsningar i början av veckan och sedan en övning på tors/fre. Tillräckligt mycket arbete utanför lektionstid, ok.
- I worked: 21-23 timmar/vecka; Finns inte mycket att kommentera från detta perspektiv. Man måste respektera kursen genom att plugga till den. Det kan vara svårt att ta till sig fysik och förstå hur allt hänger ihop. Det tar mycket tid.

What was the best aspect of the course?
- Övningarna med Arne gav en okej förståelse av problemlösning och föreläsningarna var okej men momentet med att diskutera frågor med andra elever var mycket bra under föreläsningarna.
- Peer instruction frågorna på föreläsningarna samt boken.
- Det fanns möjlighet till lärande på en massvis olika sätt! KS:ar, gruppdiskussioner, olika föreläsare, övningar etc.
- Kursansvarig var engagerad och det var bra att det fanns många olika resurser man kunde använda sig av (Quizes, Gamla tentor/KS:ar, boken, live föreläsningar, inspelade föreläsningar, övningar).
- Upplägget var väldigt tydligt och det var bra att man fick så mycket material i filerna att kolla på. Det var också bra att kunna öva med quizzes, som inte betygsattes. Det var också bra att vi fick diskutera flera uppgifter under föreläsningarna.
- Det bästa var peer instruction frågor där man fick chansen att diskutera frågor mer andra studenter och därmed ha bra diskutioner.
- Quiz bra. Att mycket gamla KS:ar och tentor finns tillgängliga på Canvas uppskattas. Lägg gärna till vettiga lösningsförslag.
- Tydlig struktur på föreläsningar/ vad som skulle gås igenom.
- Att vi hann gå igenom allt material, gick igenom exempel och hade goda möjligheter att diskutera innehåll och fråga.
- Digital och bra inspelade föreläsningar.
- Quizen var väldigt bra för lärandet! Jag uppskattade också att Apazidis videos fanns att titta på.
- Att det var en rolig kurs.
- Övningarna! Där fick man en liten sammanfattning av vad som var veckans viktiga begrepp och lite konkreta exempel på hur man räknar på det.
- Jag uppskattade också att man kunde tenta av teoridelen under kursens gång. Det gjorde att man låg i fas och att man kunde fokusera på problemlösningen inför tentan.
- Peer instruction frågorna, kul och lärorikt att diskutera!
- Lärarens pedagogik och öppenhet till frågor.
- Fysik är ett väldigt intressant ämne och det var mycket trevliga och kompetenta lärare!
- Det varierande innehållet och stimulerande upplägget. Kursen var väl balanserad. Föreläsaren/examinatorn var trevligt, rättvis och det märktes
att han ville alla det bästa.
- Mihai var mån om att alla skulle plugga kontinuerligt. Man fick också feedback på inlämningar väldigt snabbt.

What advice would you like to give to future participants?
- Anteckna och försök verkligen förstå det som gås igenom på övningen, det är i princip samma som problemlösningstentan.
- Plugga kontinuerligt (även om det är tungt att ha flervariabelanalysen samtidigt).
- Läs kapitel i boken innan de tas upp i föreläsningarna, då förstår man mycket mer.
- Gå inte bara på föreläsningarna utan gör så många uppgifter som möjligt och diskutera uppgifter med andra studenter.
- Börja med problemlösning tidigt. Jag hade själv en stor brist inom problemlösning när det var dags för tenta trots att teorin satt väldigt bra.
- Använd alla resurser som finns på bordet!
- Gör övningsuppgifter under kursens gång, skriv en egen formelbok, diskutera med kursare (!!).
- Plugga på egen hand.
- Räkna uppgifter själv! Det är först när man använder kunskapen som man tagit in som man faktiskt förstår den.
- Fokusera på att förstå teorin, det blir enklare att räkna uppgifter när man verkligen förstår.
- Plugga. Alla kurser har en rättighet. Den rättigheten är att bli respekterad och pluggad till. Tar du ifrån kursen dess rättigheter, kommer den inte att respektera dig, och utan kursens respekt som är ett godkänt betyg, kommer du inte få en examen.
- Fråga mycket, börja tidigt, räkna mycket och prata fysik med andra studenter.

SUMMARY OF STUDENTS' OPINIONS

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

The feedback from the course survey and that received during "länkmöte" agree on many points. Most importantly, even thought the course was offered Digitally, the students' results were in line with previous course offerings and the received evaluations were in general positive.

The overall impression in terms of students' experience is that they were working with interesting issues (72.7% of those which participated in the evaluation). Most students believed that the course was challenging in a stimulating way. They were active outside of the class room (spending time on task) thanks to the online quizzes implemented on Canvas. These are quizzes intended for students to practice without being graded.

They found the course challenging in a stimulating way (75% of those which answered to the evaluation).

The students felt that the intended learning outcomes (ILOs) helped them to understand what it is expected from them to achieve. They also were able to learn from concrete examples that they could relate to (75.1% of the students participating in the course analysis).

Most of students felt that the course activities helped them to achieve the ILOs efficiently. The students felt that they could practice and receive feedback without being graded (e.g., via on-line Quizzes) and that the assessment on the course was fair and honest.

The students answering to the questionnaire felt that their background knowledge was sufficient to follow the course. 75% of students participating in the course evaluation considered that they were able to learn by collaborating and discussing with others. 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 (discussions that took place in the breakout rooms via Zoom).

Here are some general comments from SG1102 students (VT2021):
- Tack Mihai för att du alltid var på gott humör och svarade ordentligt på alla våra frågor!!
- Bra kursupplägg! Jag gillade att man blev uppmuntrad till att använda sig av olika inlärningsmetoder under kursens gång.

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 results are in line with what was expected. About 73% of students that participated in the period 3 examination had grades between (A-E).

The problem exam (TENC) is usually the most difficult to handle, and it was clear this year as well.

The on-line quizzes implemented on Canvas for SG1102 during VT2020 were highly appreciated by students. They constituted a popular element in the course, but unfortunately did not help with clearing the problem examination part. The materials available on Canvas (including here the recorded lectures and exercise sessions) 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 were able to learn from concrete examples and they felt that understanding of key concepts had high priority.
- 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 analyzed during the lectures and exercise sessions.
- The assessment on the course was fair and honest.
- Their background knowledge was sufficient to follow the course.
- The students were able to learn by collaborating and discussing with their peers.

Based on the survey, there are no significant differences between students identifying as female/male, international/national, or students with /without disabilities.

Here are some of the students' comments:
- Det gjordes ingen skillnad på kön, mycket bra!
- Har inga tankar kring kursen ur ett genusperspektiv, det var inga situationer som dök upp som jag reagerat på.
- Som person med funktionsvariation kändes kursen väl överkommlig när man la ner lite extra tid där det behövdes och då man får hjälp med diverse saker som extra tid på KS:ar och tentamen.

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

Even if the teaching is back on campus, one can have a page on Canvas where links to recorded lectures are available.
The challenge may be to release the material in an optimal way; if the entire course material is released all from the beginning, it may affect negatively some students way of studying.

Regarding the exercises, there is feedback that they will probably work better on campus than digitally.