Report - EL2520 - 2020-11-19

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.

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.

Due to the special circumstances with no physical meetings this year, we did not establish a course committee. Rather, the students were encouraged to give feedback in Zoom meetings with the main teacher and the TAs, in emails to the teachers and in the final course evaluation.

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.)

Zoom meetings this year.

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

The course consists of 14 lectures, 10 exercises, 4 computer lab assignments in groups of 2 students with hand-in, and one lab project in groups of 4 with hand-in. The grade is based on a final written 5h exam, performed in Zoom this year.

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?

The majority of the (few) students who answered the course evaluation, spent around 20 hours or less per week which is within the expected. A few students spent more than this.

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 performance on the exam this year was lower compared to the previous years, both in terms of the fraction who passed as well as the grade for those who passed the exam. Most students manage to pass the re-exam in August though.
I do not believe the exam was more difficult this year, but the teaching and studying circumstances were not the best this year, given the very short notice (1 day!) of switching from at campus to online teaching. Also, the exam format on Zoom may not have been optimal, although it seemed to work better in the August exam compared to the May exam.

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

Most students are happy to have access to online material in the form of videos and lecture notes, since then they can study the material more in their own pace.

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

The (few) students who answered seem to be happy with the course, both with the teaching and the content. Several students missed the social aspect and physical meetings with the teachers and other students.

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.

From my own perspective, in particular as the course lecturer, I was not very happy with how the course was teached this year. Due to the very short time notice, we mainly presented the material we usually present in-class on Zoom, which is not a good solution I think. One thing that helped "save" the course was probably the lecture notes I have written for each lecture, summarizing these in a concise way. In addition, the TAs did a fantastic job in making short and very pedagogic videos of solutions to the exercise problems and also having on-line supervision meetings with the students.

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?

Not really; too few tudents answered.

PRIORITIZED COURSE DEVELOPMENT

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

We will make a significant effort in renewing the pedagogics before the next course round (VT21). In principle, we will base the course on the flipped classroom concept, making shorter videos of each topic dealt with in the course and having meetings with smaller groups (hopefully physical, but otherwise in Zoom another year).

OTHER INFORMATION

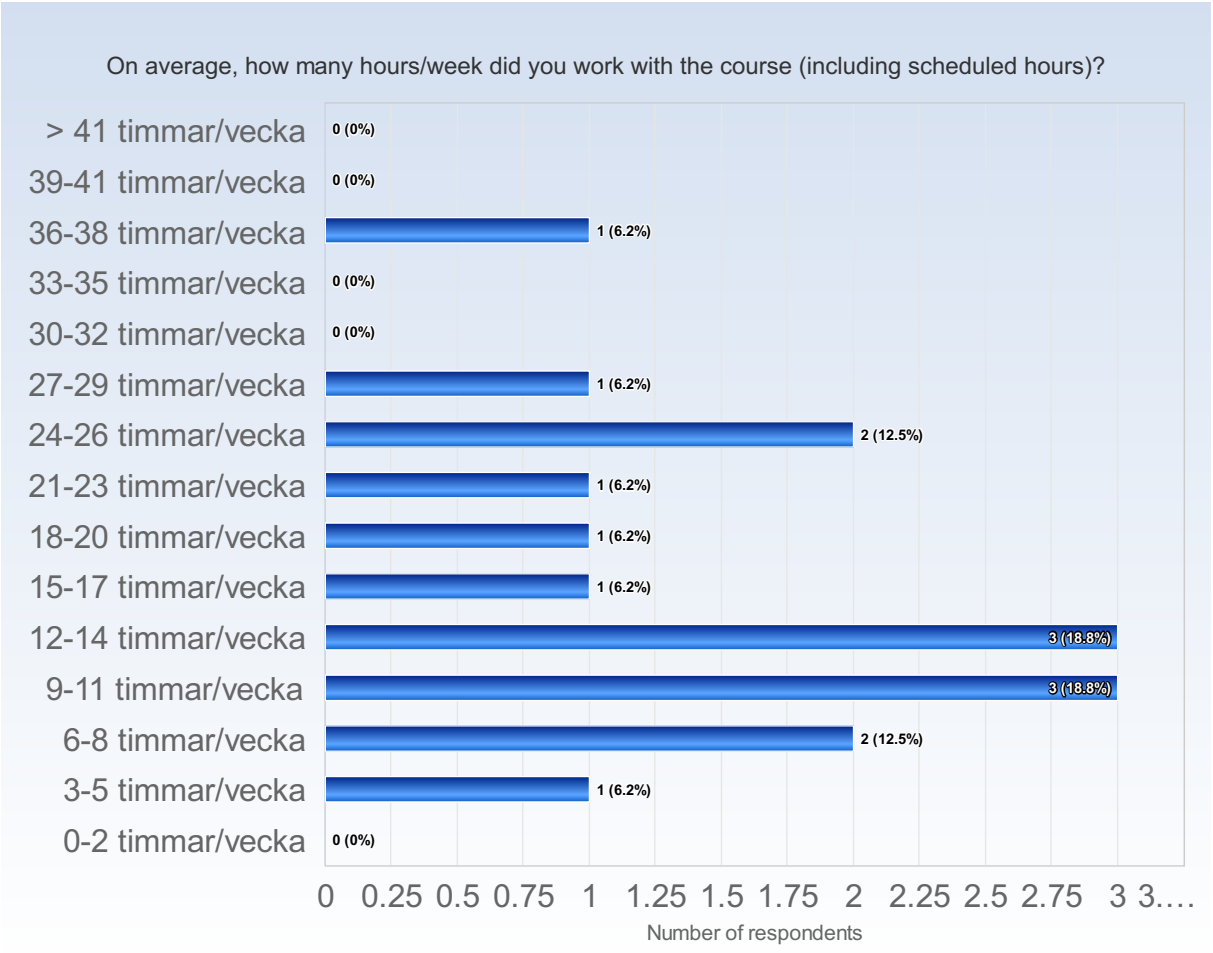
Is there anything else you would like to add?

Although the course was not teached in an optimal way this year, we learnt a lot about how to (not) do things when digitalising a course.

EL2520 - 2020-06-08

Antal respondenter: 114
Antal svar: 17
Svarsfrekvens: 14,91 %

ESTIMATED WORKLOAD



Comments

Comments (I worked: 6-8 timmar/vecka)
Nothing

Comments (I worked: 9-11 timmar/vecka)
Varied between weeks when I worked with projects and weeks where I did not. Also a lot of reading material covered the first weeks compared to later. Time it took to watch lectures and read through notes, or to watch exercise videos was much less than the usual two hours per lecture /exercise.

Comments (I worked: 15-17 timmar/vecka)
Including lectures, exercises and labs.

Comments (I worked: 18-20 timmar/vecka)
It is a course that requires lots of studying in order to understand the basic concepts and complete the labs.

Comments (I worked: 24-26 timmar/vecka)
I think the workload in this course was appropriate. How much time you need to spend depend on your previous knowledge, and for me my previous knowledge was satisfactory. I probably could have managed the course spending less hours/week (the amount of hours I selected might not be correct). However one can allways put more time into course if you feel like you want to and have the time.

Comments (I worked: 27-29 timmar/vecka)
There was a lot of different components (labs + computer exercises + lectures + exercises) to keep track of.

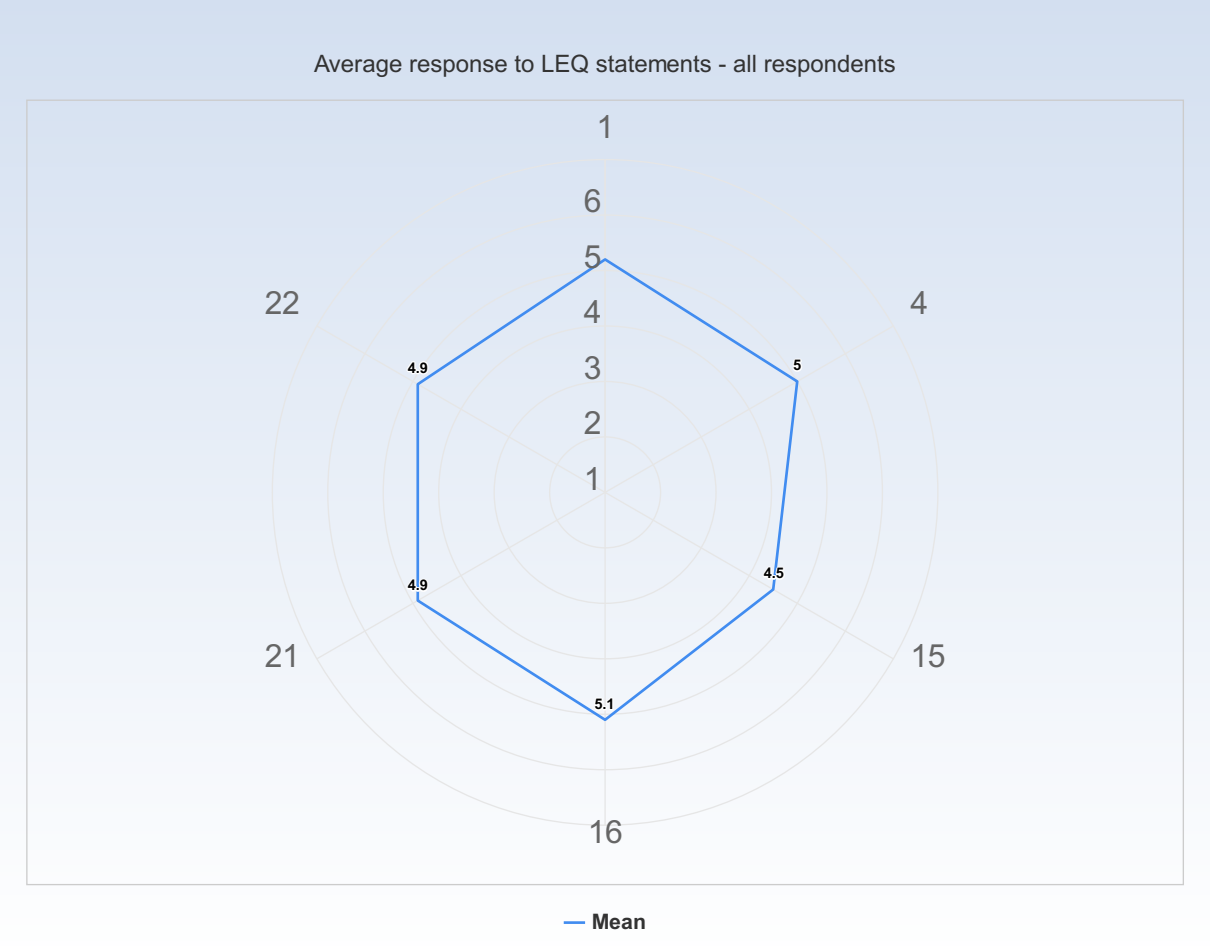
Comments (I worked: 36-38 timmar/vecka)
Time very well spent

LEARNING EXPERIENCE

The polar diagrams below show the average response to the LEQ statements for different groups of respondents (only valid responses are included). The scale that is used in the diagrams is defined by:

1 = No, I strongly disagree with the statement
4 = I am neutral to the statement
7 = Yes, I strongly agree with the statement

Note! A group has to include at least 3 respondents in order to appear in a diagram.



KTH Learning Experience Questionnaire v3.1.4

Meaningfulness - emotional level

Stimulating tasks

1. I worked with interesting issues (a)

Exploration and own experience

2. I explored parts of the subject on my own (a)
3. I was able to learn by trying out my own ideas (b)

Challenge

4. The course was challenging in a stimulating way (c)

Belonging

5. I felt togetherness with others on the course (d)
6. The atmosphere on the course was open and inclusive (d)

Comprehensibility - cognitive level

Clear goals and organization

7. The intended learning outcomes helped me to understand what I was expected to achieve (e)
8. The course was organized in a way that supported my learning (e)

Understanding of subject matter

9. I understood what the teachers were talking about (f)
10. I was able to learn from concrete examples that I could relate to (g)
11. Understanding of key concepts had high priority (h)

Constructive alignment

12. The course activities helped me to achieve the intended learning outcomes efficiently (i)
13. I understood what I was expected to learn in order to obtain a certain grade (i)

Feedback and security

14. I received regular feedback that helped me to see my progress (j)
15. I could practice and receive feedback without being graded (j)
16. The assessment on the course was fair and honest (k)

Manageability - instrumental level

Sufficient background knowledge

17. My background knowledge was sufficient to follow the course (f)

Time to reflect

18. I regularly spent time to reflect on what I learned (l)

Variation and participation

19. The course activities enabled me to learn in different ways (m)
20. I had opportunities to influence the course activities (m)

Collaboration

21. I was able to learn by collaborating and discussing with others (n)

Support

22. I was able to get support if I needed it (c)

Learning factors from the literature that LEQ intends to examine

We tend to learn most effectively (in ways that make a sustained, substantial, and positive influence on the way we think, reflect, act or feel) when:

a) We are trying to answer questions, solve problems or acquire skills that we find interesting, exciting or important

b) We are able to speculate, test ideas (intellectually or practically) and learn from experience, even before we know much about the subject

c) We are able to do so in a challenging and at the same time supportive environment

d) We feel that we are part of a community and believe that other people have confidence in our ability to learn

e) We understand the meaning of the intended learning outcomes, how the environment is organized, and what is expected of us

f) We have adequate prior knowledge to deal with the current learning situation

g) We are able to learn inductively by moving from concrete examples and experiences to general principles, rather than the reverse

h) We are challenged to develop a true understanding of key concepts and gradually create a coherent whole from the content

i) We believe that the work we are expected to do will help us to achieve the intended learning outcomes

j) We are able to try, fail, and receive feedback before, and separate from, each summative assessment of our efforts

k) We believe that our work will be considered in an honest and fair way

l) We have sufficient time for learning and devote the time needed to do so

m) We believe that we have control over our own learning, and not that we are being manipulated

n) We are able to collaborate with other learners struggling with the same problems

Literature

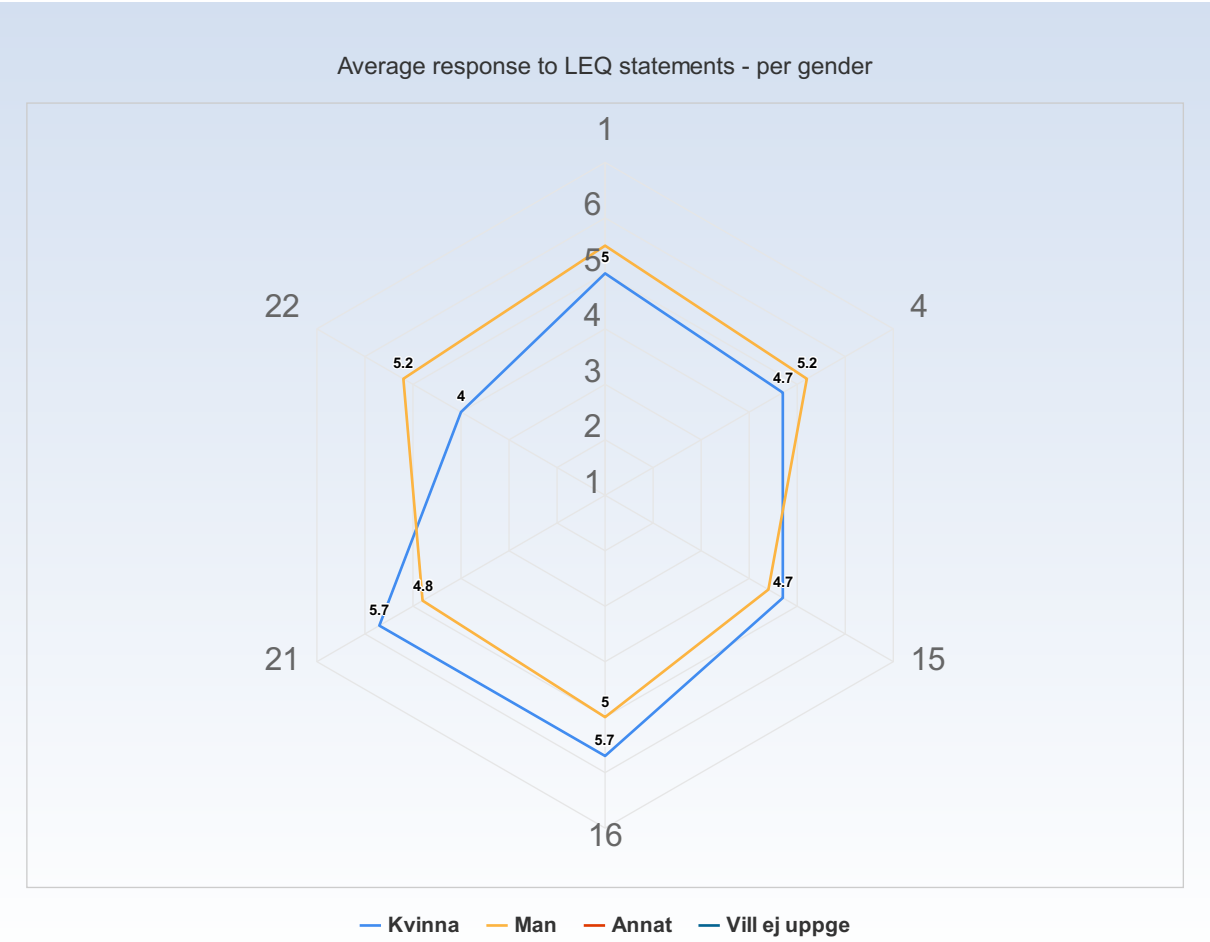
Bain, K. (2004). *What the Best College Teachers Do*, Chapter 5, pp. 98-134. Cambridge: Harvard University Press.

Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

Elmgren, M. & Henriksson, A-S. (2014). *Academic Teaching*, Chapter 3, pp. 57-72. Lund: Studentlitteratur.

Kember, K. & McNaught, C. (2007). *Enhancing University Teaching: Lessons from Research into Award-Winning Teachers*, Chapter 5, pp. 31-40. Abingdon: Routledge.

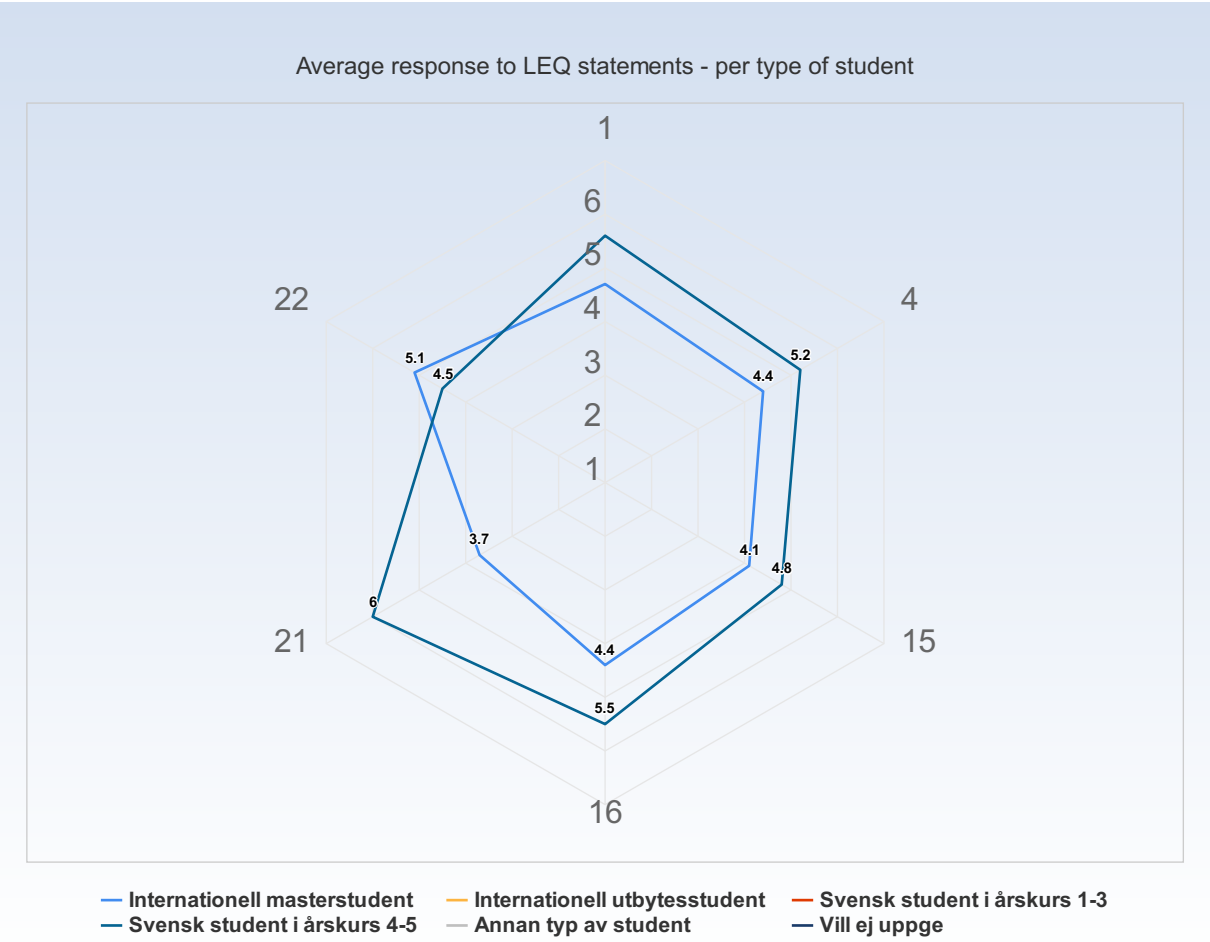
Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.



Comments

Comments (I am: Kvinna)
No comment

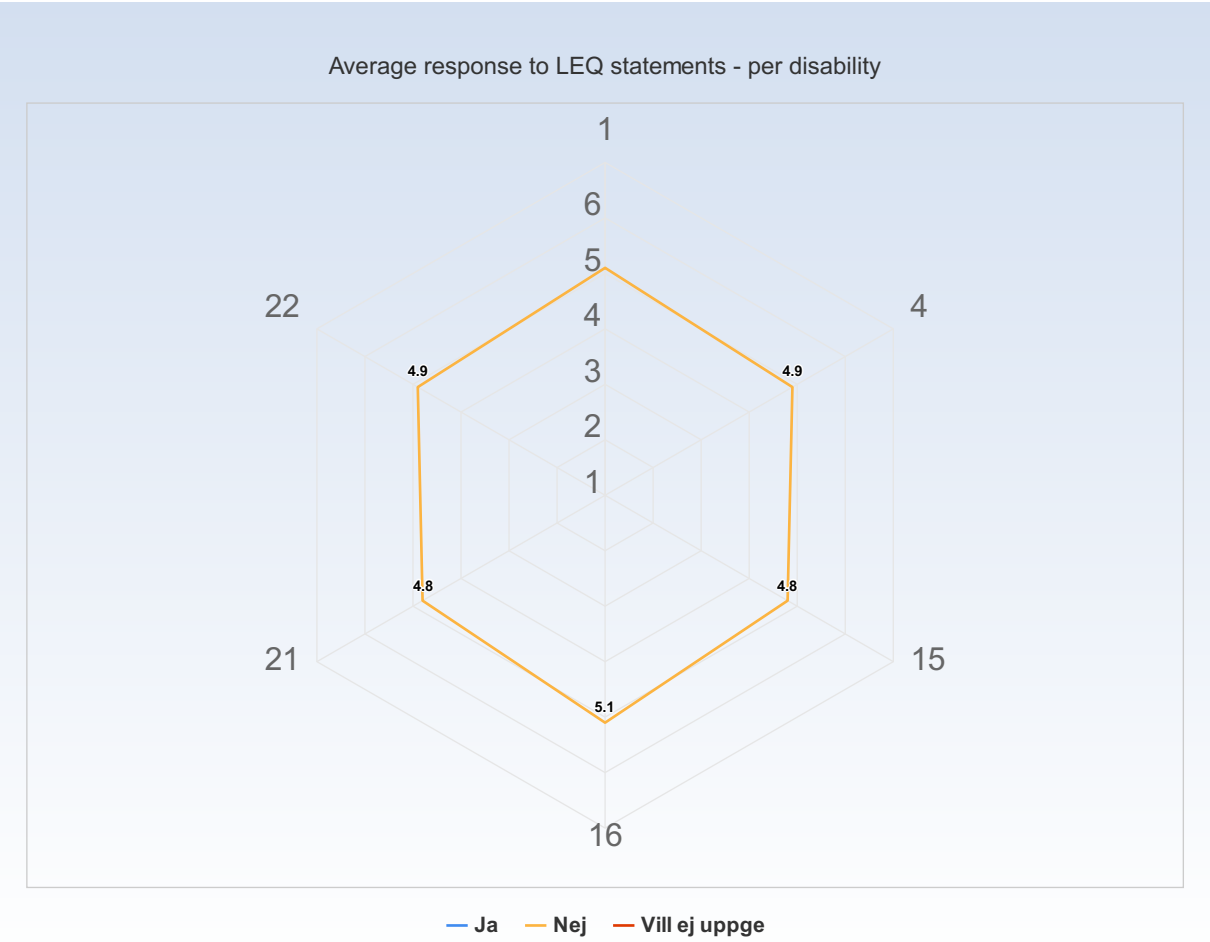
Comments (I am: Man)
Irrelevant
nothing



Comments

Comments (I am: Internationell masterstudent)
some basic thing the professor thinks that we should know but I actually do not know.

Comments (I am: Svensk student i årskurs 4-5)
Nothing to report



Comments

Comments (My response was: Nej)
I did in fact go through some considerable psychological turmoil during this time, but the studying was a help and sources of enjoyment rather than a burden.
nothing

GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 3-5 timmar/vecka)
Having the lectures available at anytime after the date of the lecture itself. It was useful to go back to previous concepts and try to connect the topics.

What was the best aspect of the course? (I worked: 6-8 timmar/vecka)
Exercises

What was the best aspect of the course? (I worked: 9-11 timmar/vecka)
Good exercise videos and lectures, with nice assignments that forces you to learn the concepts and apply them.
Very good lecture notes and exercise videos

What was the best aspect of the course? (I worked: 12-14 timmar/vecka)
That the lectures was online and pre recorded. Easy to do the work whenever

What was the best aspect of the course? (I worked: 15-17 timmar/vecka)
That it was held even during corona

What was the best aspect of the course? (I worked: 18-20 timmar/vecka)
The project was quite interesting despite the fact that we did not have the chance to perform the experiments in real life due to Covid-19.

What was the best aspect of the course? (I worked: 24-26 timmar/vecka)
There was feedback from the teacher and teacher assistant with regards to the video lectures and exercises.
I liked the course. I think it handled meny interesting and important topics that a control engineer should know about.

What was the best aspect of the course? (I worked: 27-29 timmar/vecka)
Lecture notes and exercise videos

What was the best aspect of the course? (I worked: 36-38 timmar/vecka)
The course felt very practical and worthwhile due to the computer excercises and due to the book by Skogestad/Postlewaithe as well as the excellent lecture notes by Elling. The books by Glad/Ljung can be a bit too brief with regards to implementing theory and showing nuances.

What would you suggest to improve?

What would you suggest to improve? (I worked: 3-5 timmar/vecka)
- The project work was done using a simulation. I understand that it was because of the Covid-19 situation, but it would've been a better experience to test the concepts with actual hardware. - Having the lectures pre-recorded made them feel like a summary and sometimes the topics themselves were not developed fully. I am completely aware that there were lecture notes available as well and the lecturer always pointed to check there and the book, so this is by no means trying to excuse myself for not checking them. But at least to me it gave me a different impression having the lectures pre-recorded instead of having a live lecture (having said that, I already mentioned that having the videos available after the lecture was really helpful). I also heard from friends taking the course in previous years that the lecturer used the blackboard extensively and the explanations were livelier and interesting. Maybe the online version lacked this, but I understand that this is difficult to adapt to an online format in such a short amount of time.

What would you suggest to improve? (I worked: 6-8 timmar/vecka)
Harder computer labs

What would you suggest to improve? (I worked: 9-11 timmar/vecka)
Sometimes the lab/assignment report templates were a bit unclear on what we should write in the report (since we were not supposed to write anything that was not asked for). For example, in assignment 2 we were supposed to add some discussion that was asked for in the lab instructions, but not in the template, and then had to resubmit because it was missing.
Sometimes it felt like the TA in the help session for the computer exercises hadn’t read the material and didn’t know what the lab was about.

What would you suggest to improve? (I worked: 12-14 timmar/vecka)
It was really hard doing and understanding exercises and asking questions online. I felt like i was not prepared for the exam and did not understand the course. Even do i watch all exercise and lectures.

What would you suggest to improve? (I worked: 15-17 timmar/vecka)
The lectures was not supporting the materials we had. The lectures was only repetition of the reading materials and I felt it hard to actually deeply understand the course content on my own. I'm not sure how to improve it due to corona, maybe live held lectures instead of recorded as it's easier to interact for both students and professors, same for the exercises. I think especially as this course i mathematically heavy compared to other courses at the master so far. So in general, more explanations/analysis instead of just calculating. Maybe update the labs as the instructions were 20 years old :)

What would you suggest to improve? (I worked: 18-20 timmar/vecka)
The Lecture slides could be improved and also the video lectures could be better.

What would you suggest to improve? (I worked: 21-23 timmar/vecka)
Comp exercises or labs were a lot of work and should contribute to final grade (in addition to the exam grade).

What would you suggest to improve? (I worked: 24-26 timmar/vecka)
If having to present online again, don't just use PowerPoint presentations. When doing this, you just rush through the presentation reading the slides. Instead, it could work better to use a digital pad to write in, using it as a blackboard. This way, the pace would be easier to understand and maybe also the explanations.
I think you should put more additional material on canvas, like articles and other stuff that you recommend. This material can be optional for the student to read and not a must to manage the course. Of course one can just google for more material, but it is nice to get material recommended from the teacher so that you know the material is good and relevant. I would have liked to get more feedback on the labs.

What would you suggest to improve? (I worked: 27-29 timmar/vecka)
Maybe one less computer exercise would be better. The 4th one collided a lot with the lab project in terms of time

What would you suggest to improve? (I worked: 36-38 timmar/vecka)
I suppose it may be a slightly unconfortable idea but i recommend replacing the main recommended course litterature, i found the more advanced book more pleasant to read and one can skip when they go more in depth (the first few chapters are almost enough and hold more information that Glad/Ljung). Plus, now i have a good reference book when i need more advanced information. While i appreciate books in Swedish too, these books are an added expense since i always found it neccessary to buy and addidtional book in EL1000, EL2620 and this. For example in EL1000, I used Control Systems by Norman Nise alot which helped alot in using Nyquist diagrams and root locus plots.

What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 6-8 timmar/vecka)
Read the lecture notes carefully

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)
Start with the projects early so you can ask questions if you get stuck!

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)
Ask alot of questions and work togheter.

What advice would you like to give to future participants? (I worked: 15-17 timmar/vecka)
I honestly don't know. I did all exercises, labs and lectures and all previous exams but found our exam really really hard.

What advice would you like to give to future participants? (I worked: 18-20 timmar/vecka)
Focus on the course from the very beginning before it gets tougher.

What advice would you like to give to future participants? (I worked: 24-26 timmar/vecka)
Start solving the previous exams as soon as possible. For the computer exercises have communication with other students so that you can solve them quicker.

What advice would you like to give to future participants? (I worked: 27-29 timmar/vecka)
Keep focused and dedicated. Finish the computer exercises early.

What advice would you like to give to future participants? (I worked: 36-38 timmar/vecka)
To get the book by Skogestad/Postlewaithe and read the first few chapters at least.

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)
some basic things

Is there anything else you would like to add? (I worked: 9-11 timmar/vecka)
Nice course and content overall!
I think this course was very well handled with respect to the strange situation with covid19. The video lectures and exercise were of good quality and it felt like I could learn as much as I would have done in normal case.

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)
I understand that it was a special year with COVID-19. But it would help alot if stuff was explained more what the was used for and more exactly in the coursebook you could read about. It was also hard for me to find where in the course book all formulas for all the different problems where.

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)
I understand this was not a normal situation for any of us, but as we are master students and have done many exams to prove we are good enough I think it would have been more fair due to these Corona times to skip the exam and include a more theoretical part and perhaps a literature study in the project. Not because I'm lazy, but because this course was so mathematically heavy and without support from TA's and teachers during the course it's really hard to actually understand what's going on. I expect my workload not to be enough to pass the exam...

Is there anything else you would like to add? (I worked: 18-20 timmar/vecka)
-

Is there anything else you would like to add? (I worked: 24-26 timmar/vecka)
It was a difficult situation for everyone, and we all tried our best to live through this period and study online. Unfortunately, I don't think it works because us students are not used to studying online, and the teachers are not used to teaching online.
In general i think the teaching was good in this course. An advice for all teachers is to talk about the intuition behind a concept and what the concept is used for. It is important to not only talk about the equations.

Is there anything else you would like to add? (I worked: 36-38 timmar/vecka)
Thanks Elling for the course! It was incredibly useful and had a very well thought out scope and focus. It added to my interest in control, would that i should see more of you in the future.

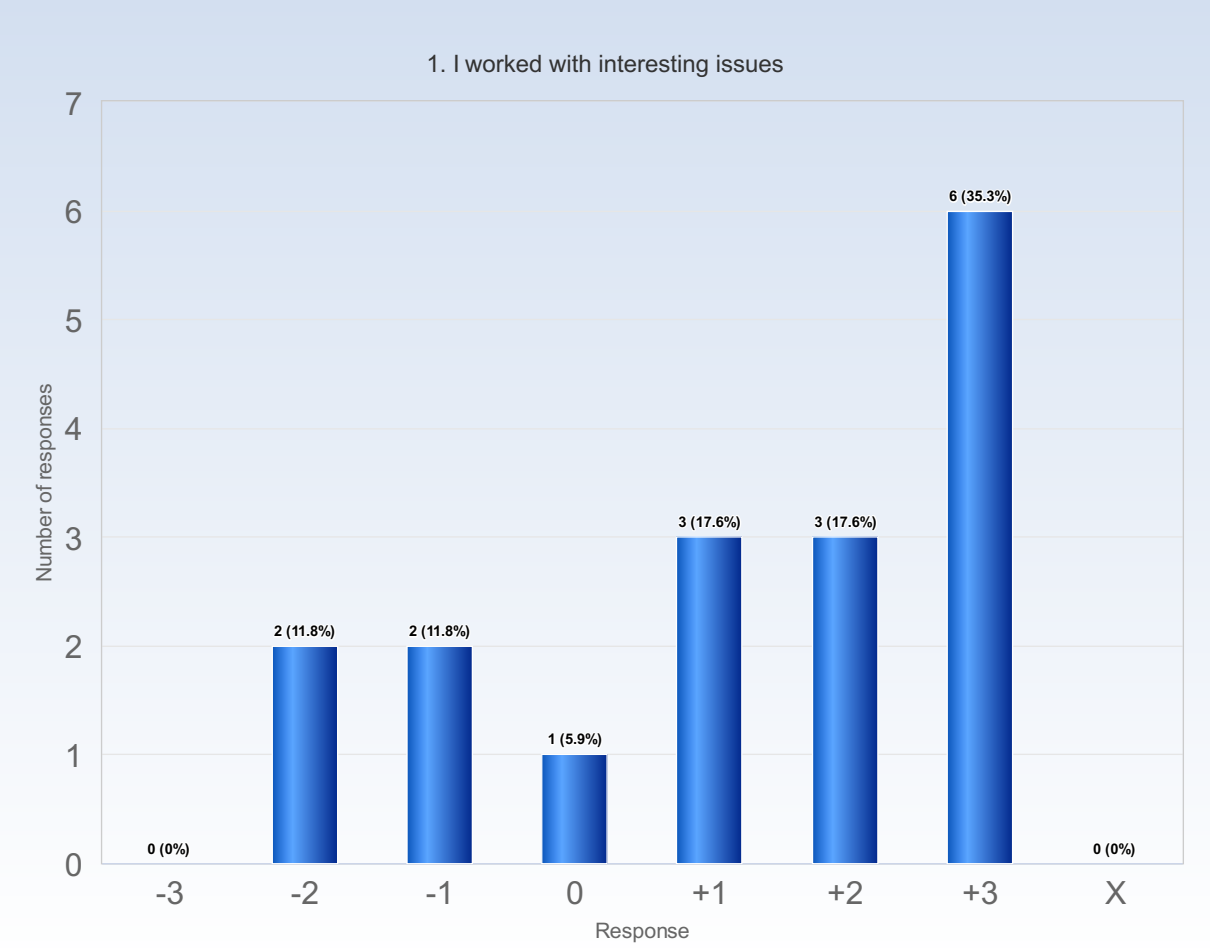
SPECIFIC QUESTIONS

RESPONSE DATA

The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-3 = No, I strongly disagree with the statement
0 = I am neutral to the statement
+3 = Yes, I strongly agree with the statement

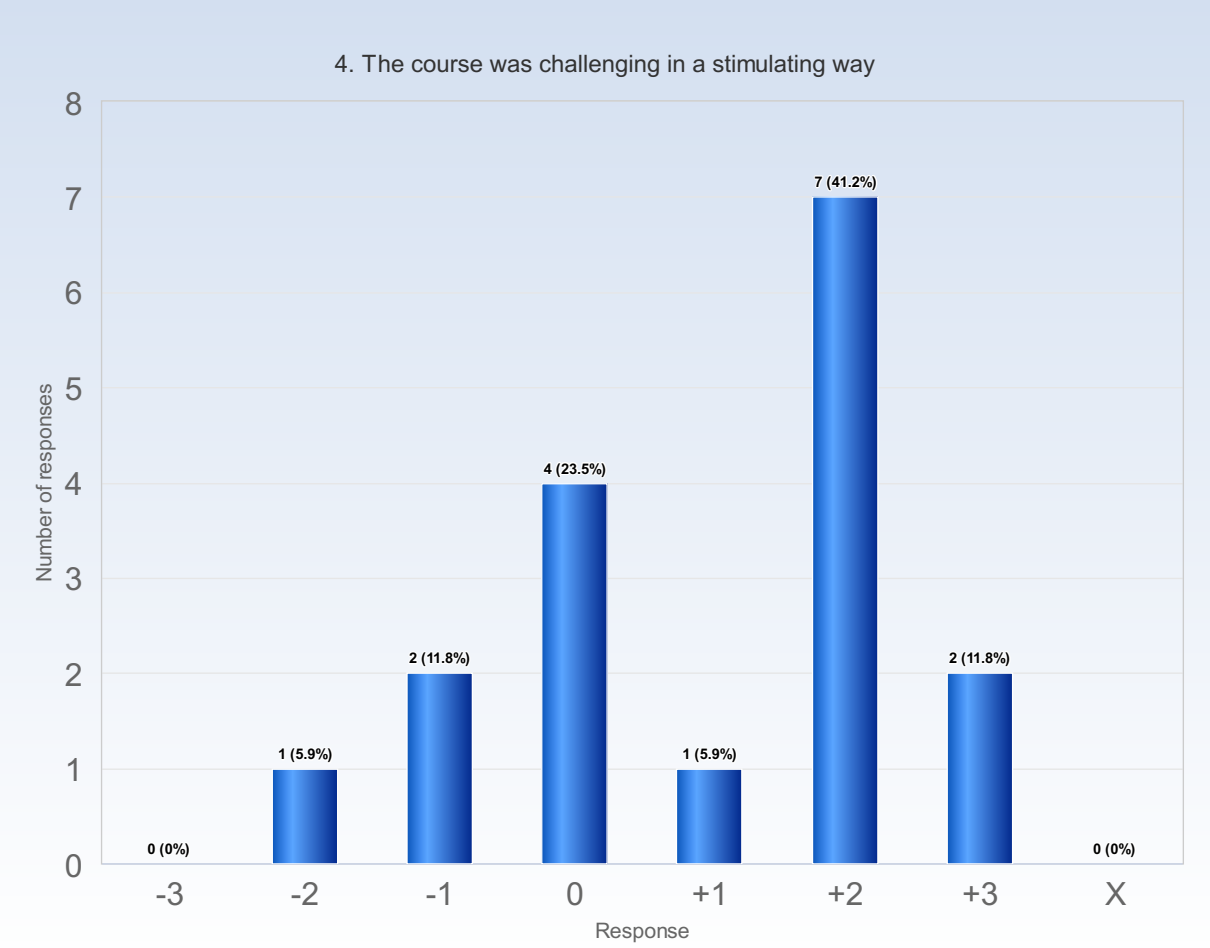
X = I decline to take a position on the statement



Comments

Comments (My response was: -2)

water tanks is not really the most exciting



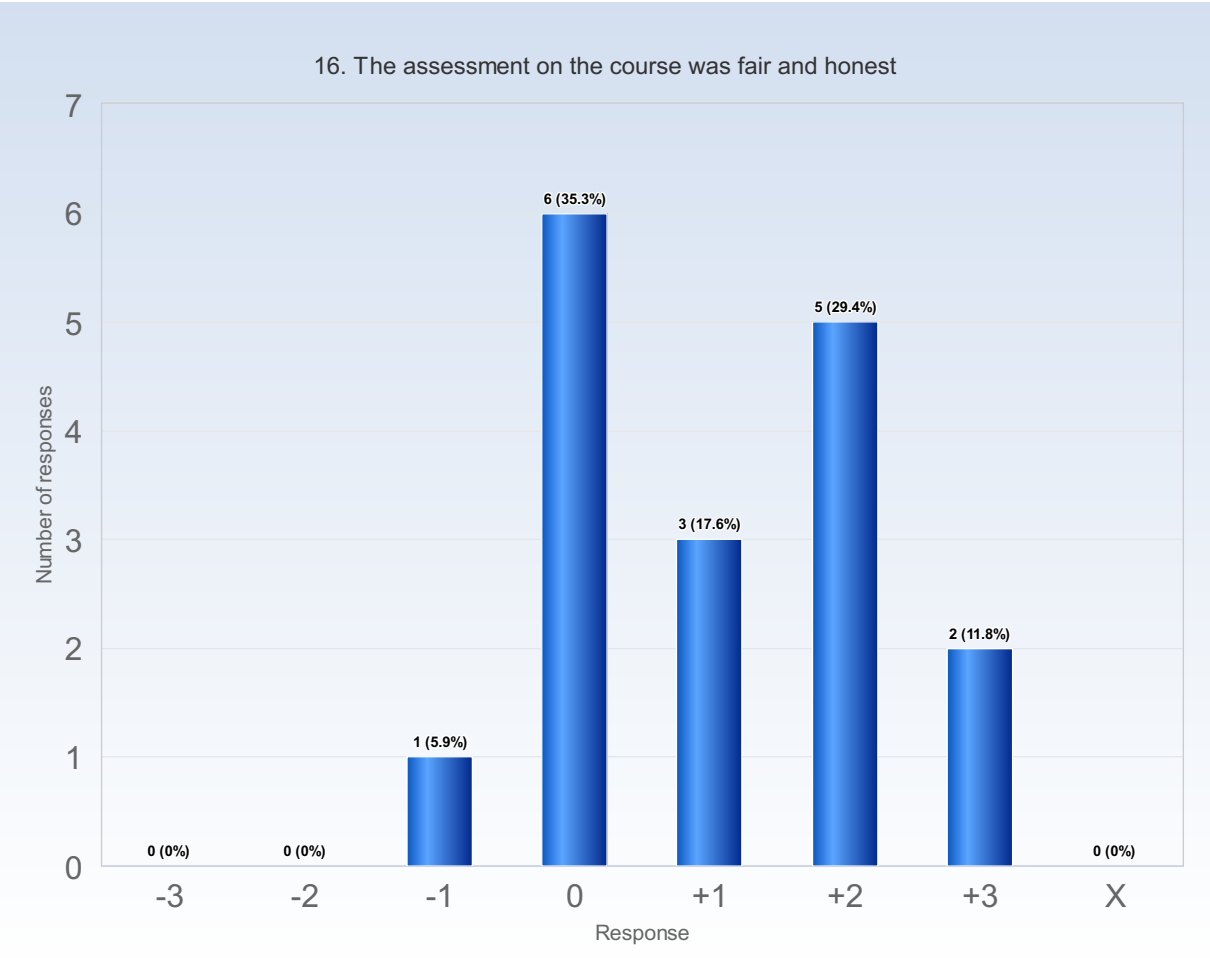
Comments

Comments (My response was: -1)

it was really hard

Comments

Comments (My response was: +1)
the TA's was really helpful when we emailed, but sometimes it took more than one day to get an answer.
I would have liked more individual feedback on the labs.



Comments

Comments (My response was: 0)
dont know

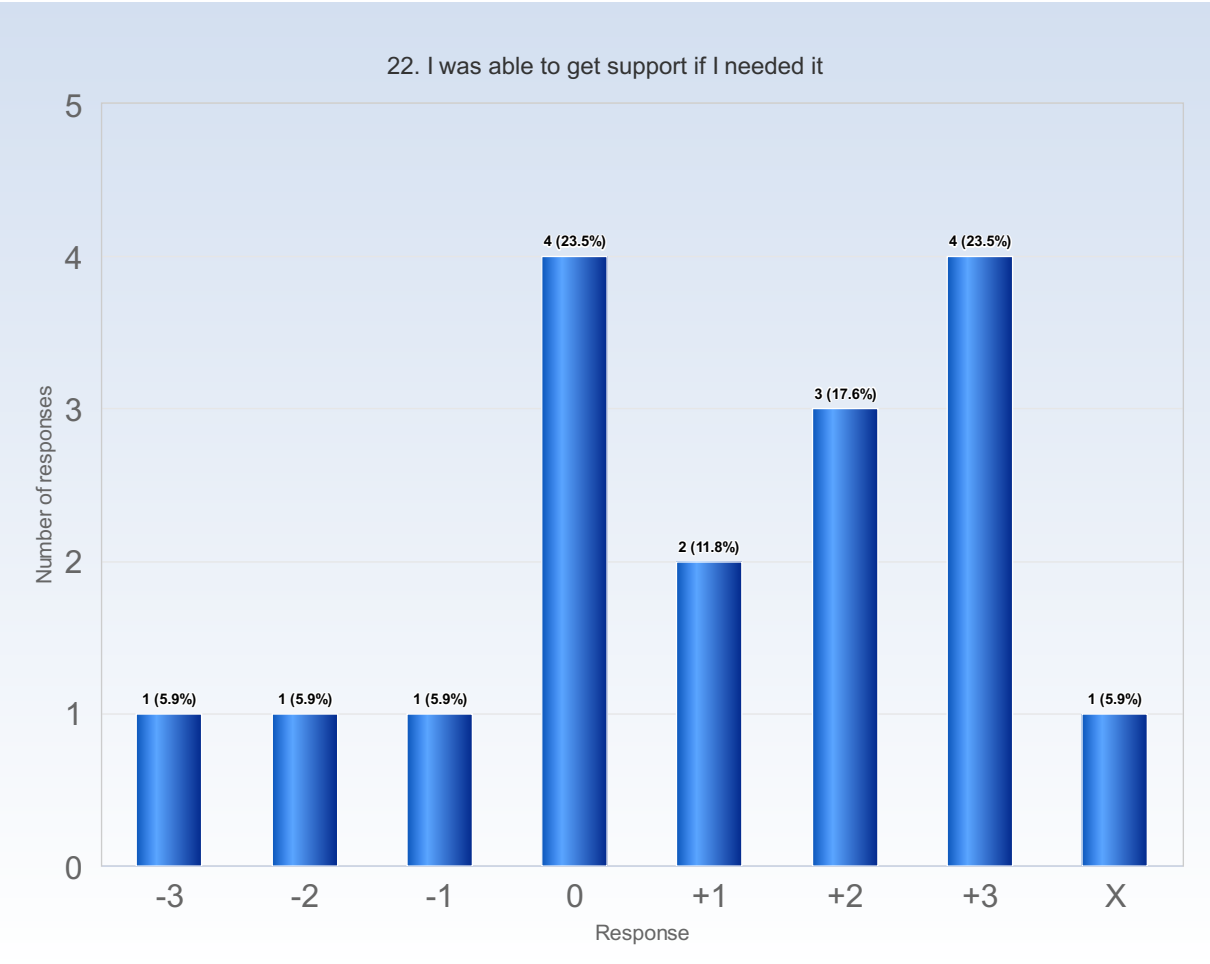
Comments

Comments (My response was: +1)

only by the labs, but the exercises was not easy to go through together

Comments (My response was: +2)

It is harder when working from home, but the zoom sessions where we could ask questions were nice (especially for the projects)



Comments

Comments (My response was: -3)

It was really hard to go through the lecture material , it felt as the lectures was not explaning the detalis further so I struggled with udnerstanding many of the concepts

Comments (My response was: -2)

Superhard doing exercises and asking question online.

Comments (My response was: +2)

A lot of TA support available

Vad tyckte du var positivt med online undervisning?

Vad tyckte du var positivt med online undervisning?
Saves alot of time provided that the material is good
Very good video lectures and exercise. It was helpful that you can pause and go back to them if you needed repetition. I also enjoyed that I could plan my day like I wanted to since the videos were always available instead of having zoom lectures.
You can pause and play the lecture videos as you like
Being able to watch lectures/exercise videos in our own time was nice. Being able to pause and rewind for challenging topics or problems was super helpful.
It is nice that we can watch the lectures again if needed.
You could go in your own pace! Perfect with online lectures even in the future and do more exercises in small groups in class. I think it is important to solve exercises togheter in class.
I didn't like it. Maybe a positive thing with videos is that we can pause them. However, this kind of thinking led to just rushing through the slides without actually explaining things, with which I had to spend at least double the time on this course than the time it was supposed to take.
So many useful material available online. It was very beneficial for me.
THAT I DIDN'T HAVE TO LISTEN TO THE WHIRRING OF THE WATER TANKS IN THE LAB FOR FOUR HOURS THANK GOD
Being able to study everywhere and anytime.
Completing the video lectures any time and have the opportunity to rewatch if necessary.

Vad tyckte du var negativt med online undervisning?

Vad tyckte du var negativt med online undervisning?
For many students the social aspect of being on campus is crucial and irreplaceable. I suspect there are a couple of different ways that people tend to learn best. I enjoy reading, others essentially do not read but may become very adept engineers anyway.
There isn’t as much discussion among peers and it can at times be difficult to motivate yourself to study.
Forget to play all the lecture videos on my own
I felt discouraged from asking questions. I often felt uncomfortable posting a question online that I would've felt comfortable asking during lecture or an exercise session. Instead I ended up spending a lot of time trying to find the answers on my own, but discussing them with a TA would've been better.
Less interactive. I had other courses with live lectures which was better and forced me to concentrate as usual.
To hard do ask questions online.
Almost everything. In my opinion, it doesn't work. We all tried our best. Unfortunately, it's not worth it, taking the courses online.
The exam felt harder than the earlier ones.
- More difficult to ask questions. - Don't get the same contact with the teachers. - You need to be more disciplined in your studies. At least for some. - Not being able to do the lab on real hardware really disappointed me. I think best approach would be to do the teaching as normal but also put video lectures and exercises online.
The teacher could have made some of the lectures in real time in order to interact a bit with the students and answer some questions. The canvas question topics haven't been successful.