Report - EF2240 - 2021-02-16

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):

Tomas Karlsson, tomas.karlsson@ee.kth.se

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 main source of feedback is the course survey, which is attached here.

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.)

Feedback has been handled in an informal way. I also arranged a few meetings at the end of the course where it was possible to bring up questions and clarifications.

COURSE DESIGN

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

The course contains 10 x 2 h lectures, and 6 x 2 h tutorials. In the first part of the tutorial solutions are demonstrated, in the second part (during 5 if the 6 tutorials) a mini-groupwork is performed. The mini-groupwork gives bonus points to be added to the final examination.

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?

Nominally the course of 6 hp should correspond to a workload of 16 h/week. The students report a somewhat lower work load. I think that this reflects the fact that this is not perceived to be an extremely difficult course.

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?

Very high rate of pass, again consistent with the above.

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

'This course is not too heavy on the workload, at least before the exam. Outside of the course I mainly worked on finishing the minigroupworks,

training for the tutorials and the mock-exams.'

'The format of the lectures and the group work gives a very even weekly workload. Works great'

'The topic was incredibly interesting'

'Probably the best lectures I have ever had at KTH. Not too theory-heavy, emphasis on understanding the concepts, and the lecture quizzes were great.'

'Good lectures, fast responses to questions, the help from Savvas'

'The lectures were always really interestings, filled with facts that we can relate to.'

'Maybe arrange some lab work, even maybe actively retrieving data and calculating stuff if my directly experiments which might be hard to do on plasma'

'I know we are on a Master's level but maybe consider spending 15-20 minutes in the very beginning of the course to repeat basics of E fields, B fields, Maxwell equations, etc. I have a mechanical engineering background and only had high school knowledge of these topics.'

'Another thing that I would have liked to see in the course would be a more in depth look into various instruments that could be used to measure
the phenomenon described in the course.'

'Fantastic course, thank you very much!'

'Kudos to Savvas for his helpfulness.'

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

In summary the students are very happy with the course. There are of course things that can be tweaked, but this year the focus was on moving the teaching online.

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 course works very well. As mentioned, the focus this year was to move to Zoom for lectures and tutorials. In general this worked quite well, with only minor technical mishaps.

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?

This year the students had less interaction with each other due to the on-line teaching. Hopefully this will change until next autumn. If not, some strategy to overcome this weakness may be needed.

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

After this pandemic-adjusted year, some of the technical solutions used may be kept and incorporated in future teaching, perhaps moving toward a more blended teaching format. An example could be recorded solutions of old exam questions, with particular focus on solutions methodology including sanity checks and unit checks for the answers.

OTHER INFORMATION

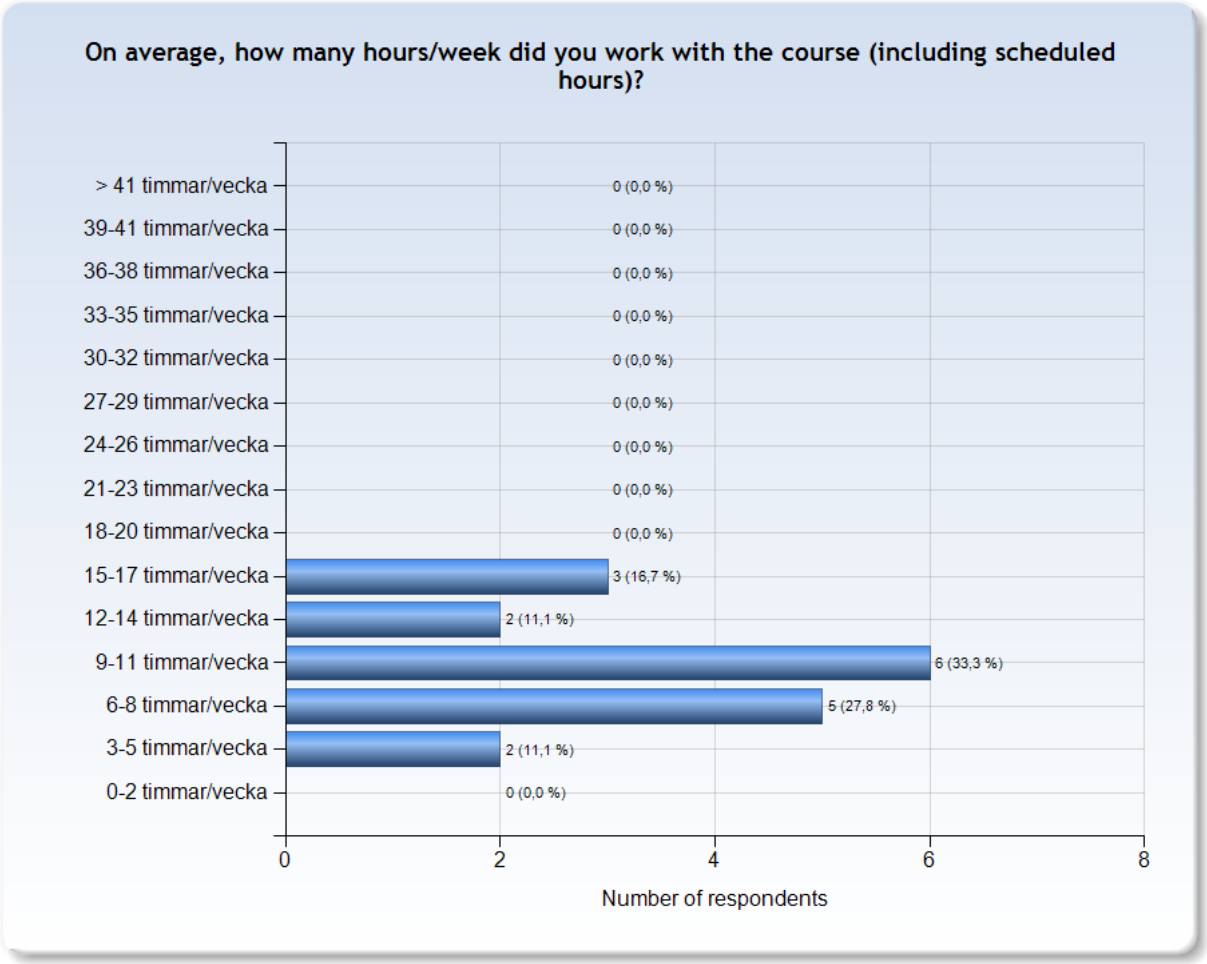
Is there anything else you would like to add?

This year was the first time I had a PhD assistant to do the tutorials. I think this worked very well, at least after a few tutorials when he got a little bit if practice. The students were quite happy with his helpfulness.

EF2240 - 2020-10-19

Antal respondenter: 41
Antal svar: 18
Svarsfrekvens: 43,90 %

ESTIMATED WORKLOAD



Comments

Comments (I worked: 3-5 timmar/vecka)
I had a limited amount of time to study the course because I'm working full-time.
The course seemed quite easy

Comments (I worked: 6-8 timmar/vecka)
This course is not too heavy on the workload, at least before the exam. Outside of the course I mainly worked on finishing the minigroupworks, training for the tutorials and the mock-exams.
The format of the lectures and the group work gives a very even weekly workload. Works great

Comments (I worked: 9-11 timmar/vecka)
I think it's good.

Comments (I worked: 12-14 timmar/vecka)
I felt like the course was fairly low intensity (work load-wise), and would have preferred having more mandatory hand-in exercises during the course. The way it is now you didn't really have that much material other than pure reading material before the exam week.

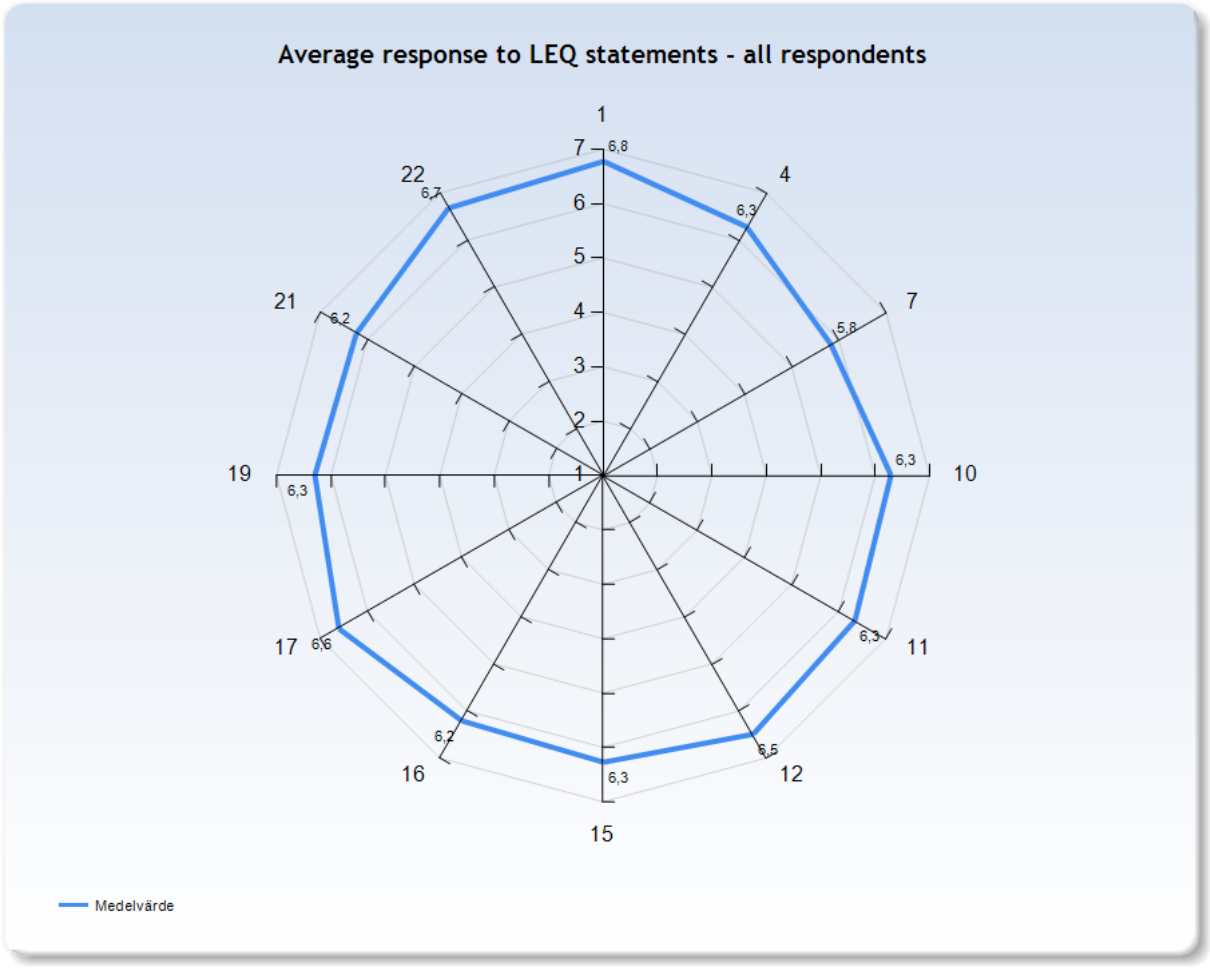
Comments (I worked: 15-17 timmar/vecka)
Not too hard to follow
well its a balanced workload with assignments to do and tutorials to prepare for.

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.


Average response to LEQ statements - all respondents
1
4
7
10
11
12
15
16
17
19
21
22
6,8
6,3
5,8
6,3
6,3
6,5
6,3
6,2
6,6
6,3
6,2
6,7
1
2
3
4
5
6
7
Medelvärde

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

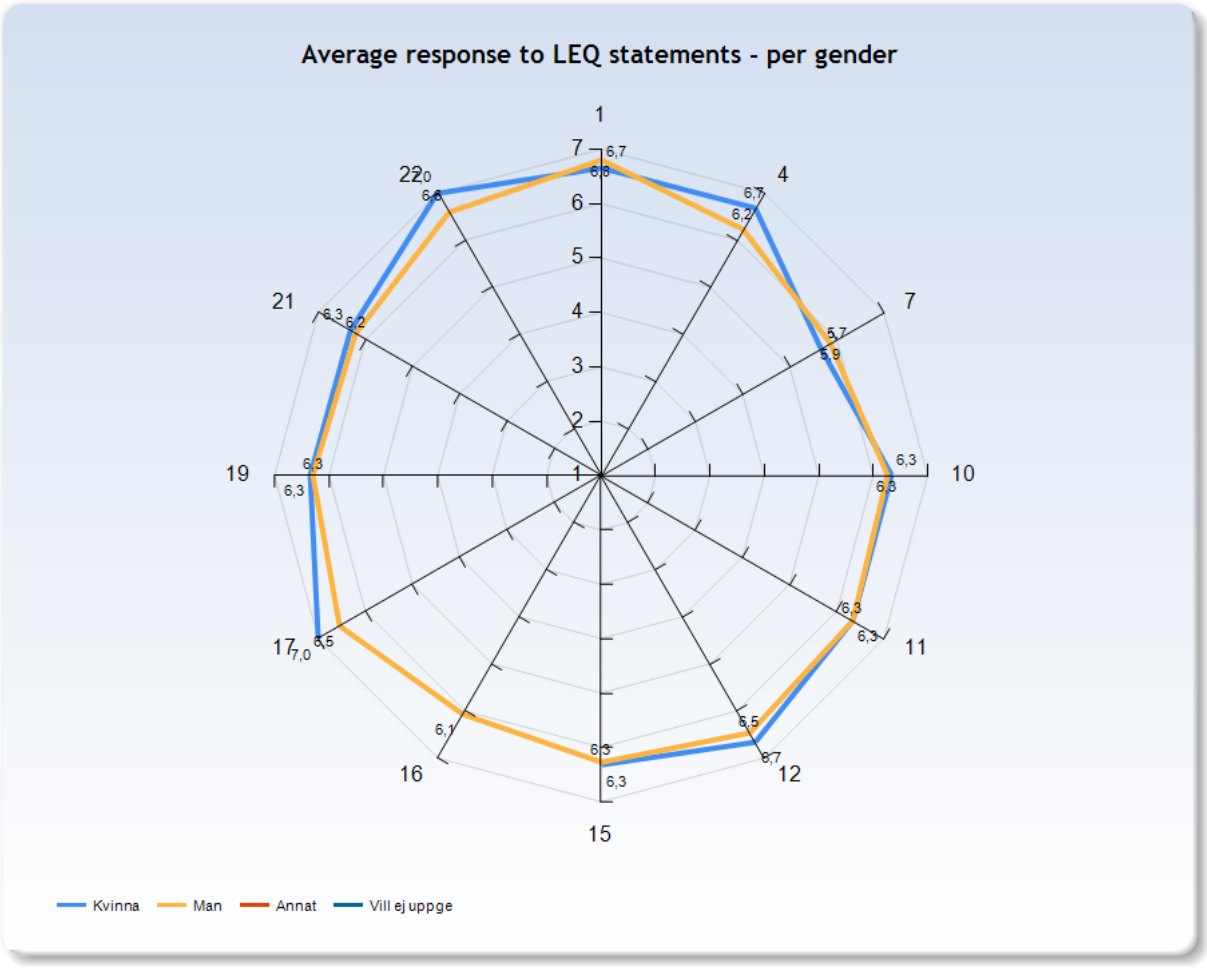
Bain, K. (2004). *What the Best College Teachers Do*, Chapter 5, pp. 98-134. Cambridge: Harvard University Press.

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.

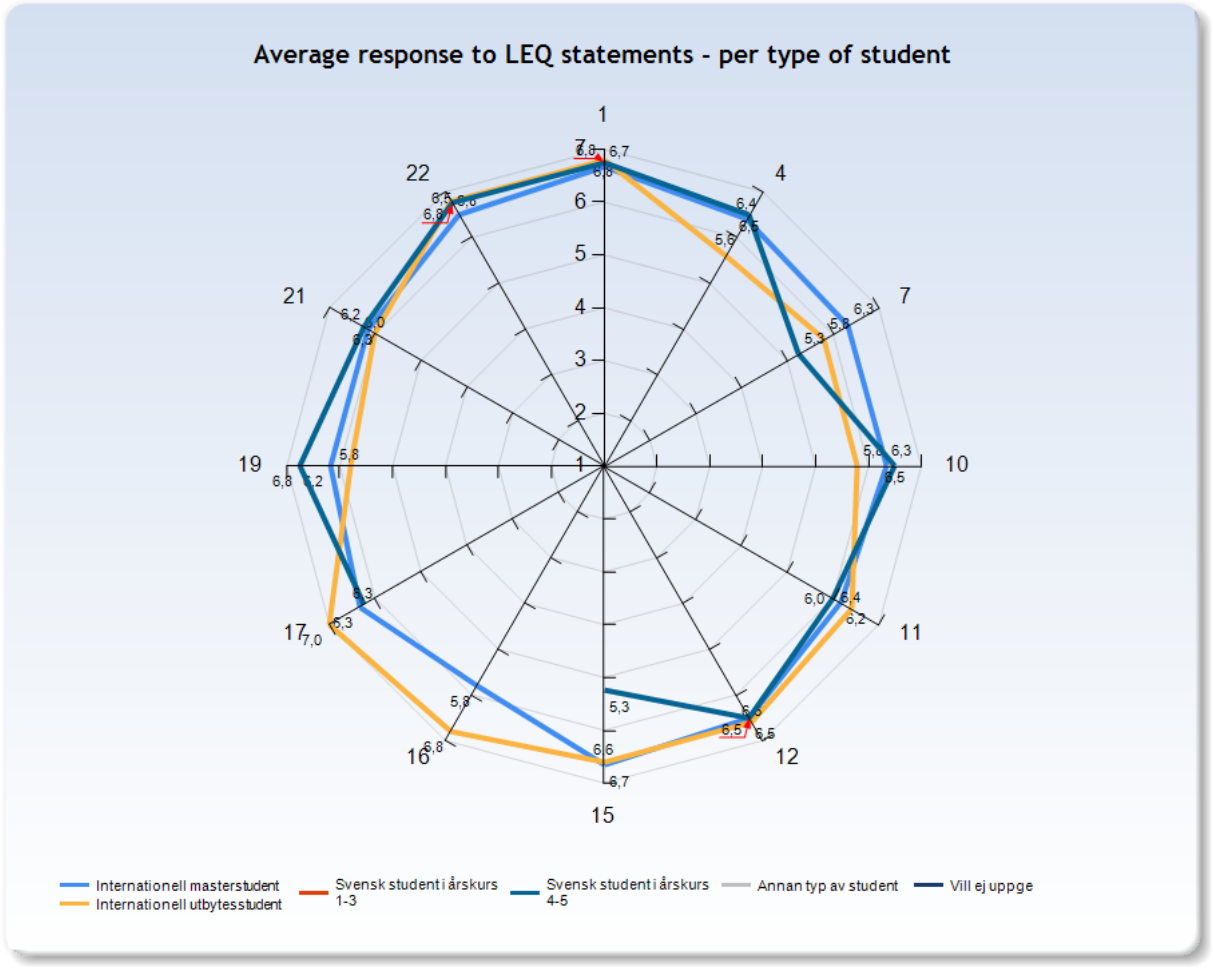
Kember, K. & McNaught, C. (2007). *Enhancing University Teaching: Lessons from Research into Award-Winning Teachers*, Chapter 5, pp. 31-40. Abingdon: Routledge.

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



Comments

Comments (I am: Man)
Everyone is treated in the most equal and fair way
Nothing to say
My sex/gender was, from my perspective, completely irrelevant to the course.
i am from the nuclear energy department and i took this course as a pre-requisite for Space Environment and Spacecraft Engineering. i dont think the course required any background knowledge from the space perspective since all the learning could be done from the course book which was sufficient.

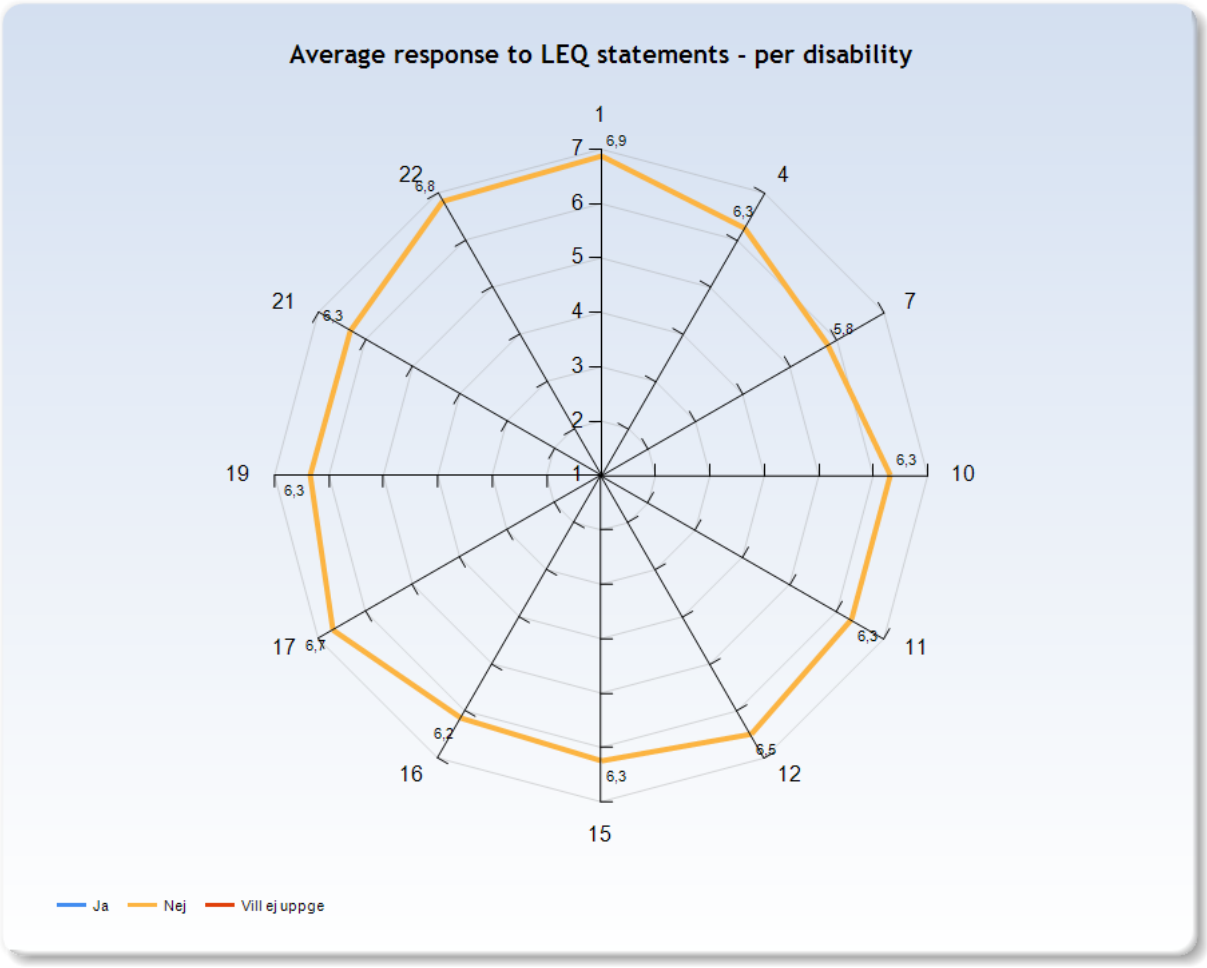


Comments

Comments (I am: Internationell masterstudent)
Nothing particular to comment on as an international student. Everything was in English, no problems there.
Good English, few swedish typos in the slides but overall very good course

Comments (I am: Svensk student i årskurs 4-5)
One of the top courses I've taken at KTH

Comments (I am: Annan typ av student)
As I said before, I didn't have a lot of time to study for the course due to current work commitments. But I hope to revisit the course material again during a quieter period.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1
Ja
Nej
Vill ej uppge

Comments

GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 3-5 timmar/vecka)
I thought the course gave a very good overview of lots of interesting topics I had not had the chance to learn about before in my physics degree. It was interesting to learn about the combination of fluid dynamics (my field) and electrodynamics. Perhaps I may have taken a different direction had I studied this course earlier in my career!
The topic was incredibly interesting

What was the best aspect of the course? (I worked: 6-8 timmar/vecka)
The most interesting aspect for me was discovering what plasma physics is and actually studying it. So the lectures were my favorite part. However the tutorials and the minigroupwork really helped with grasping the different concepts and models.
Learning about the actual environment in space and what it's generally regulated by
The topic was interesting
The lectures. Probably the best lectures I have ever had at KTH. Not too theory-heavy, emphasis on understanding the concepts, and the lecture quizzes were great.
The slides of the course and the lectures were very detailled and clear, the exam was really easy to study thanks to all the documentation we had available on canvas.

What was the best aspect of the course? (I worked: 9-11 timmar/vecka)
Mini group work ! It's a good way to exchange ideas with people.
The tutorials. Although quite intense, they were very good.
Very systematic overview to explain various aspects of (space) plasma and the processes driving plasma phenomena.
Good lectures, fast responses to questions, the help from Savvas, good combination of learning activities, the last minute feedback.
The course is really focused on qualitative understanding of the physics phenomena. The lectures were always really interestings, filled with facts that we can relate to.

What was the best aspect of the course? (I worked: 12-14 timmar/vecka)
The fact that there were mini group works and each time we had new set of teammates helped in interacting and understanding the concepts well with team efforts.
Interesting topics, lot's of real world examples, and a very broad and conceptual introduction to the topics rather than going straight to heavy physics calculations.

What was the best aspect of the course? (I worked: 15-17 timmar/vecka)
It was fun and really interesting.
Interesting phenomena, good to have recorded lectures
to be able to take real time data available from the internet, and formulate problems for understanding concepts

What would you suggest to improve?

What would you suggest to improve? (I worked: 6-8 timmar/vecka)
The corrections in the tutorials were a bit quick at first, but Savvas improved on it after a while.
Maybe arrange some lab work, even maybe actively retrieving data and calculating stuff if my directly experiments which might be hard to do on plasma
Maybe make the MGW:s a bit more rigorous, or harder? Some of them felt a bit easy. If you have 3 people in each group, its OK to give a bit more work. Maybe make them as exam-type question, or even a bit harder than that so that we are a bit more prepared for the final exam.
Doing the workshop on Zoom was a little tricky especially the part when we have to work as a group because it's difficult to move forward when we can't see each other or explain our ideas without a proper sheet.

What would you suggest to improve? (I worked: 9-11 timmar/vecka)
The tutorials are done to quickly ! You should recommend to student to work on it before the tutorial to learn something about it.
The schedule went outdated quite fast, which could be improved. This made reading before lectures harder.
I know we are on a Master's level but maybe consider spending 15-20 minutes in the very beginning of the course to repeat basics of E fields, B fields, Maxwell equations, etc. I have a mechanical engineering background and only had high school knowledge of these topics. I still managed to follow along and answer upcoming questions by myself but such a brief wrap up would have been helpful.
Not sure... I think this is one of the best structured courses I've taken at KTH.

What would you suggest to improve? (I worked: 12-14 timmar/vecka)
At times, the tutorial problems could not be completed due to the time limitations. Maybe having a separate time slot allotted for mini group work and a separate two hour session for tutorials would be better instead of having both of the sessions combined.
More mandatory hand-in exercises, as there isn't a lot of calculation done in the course before the exam week. I feel like I understand the concepts better if I get to sit down and apply them to a problem. Another thing that I would have liked to see in the course would be a more in depth look into various instruments that could be used to measure the phenomenon described in the course. Maybe a small instrument/experiment design project of some sort?

What would you suggest to improve? (I worked: 15-17 timmar/vecka)
This years exam felt like it was much harder than the previous years, and I'm not the only one who feel this way. It felt like it had problems that we hadn't really seen before and was therefore hard to apply the knowledge we had gained during this period.
Not so big difference in difficulty in the new modality of exam
perhaps the tutorial classes should be done in an assignment manner (individually) to understand them before hand since the tutorial lectures is just a speed run and sometimes it just goes over the head.

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)
Try to prepare the tutorial exercises and do the mock-exam problems. It's a good way to check if the concepts so far are understood.
Keep the exercises pace
If you pay attention during the lectures (they are super interesting) you wont really have to study on your own. Keep an open mind for the MGW problems. Dont hesitate to ask questions.
During the hour of group workshop, try to be as efficient as possible because even if there is not a lot of questions, it can take more than an our to do and you will need to reach each other outside the scheduled hours to finish the minigroup work.

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)
Work on tutorial before it to learn something about it.
Looking at the tutorial problems on your own after the session can be helpful, making problem solving more continuous.
Follow the lectures, do the mock exams, be active in the group works.
Go to and enjoy all the lectures, it is the best way to learn.

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)
Take advantage of tutorial discussions. Do attempt mock exam problems. It gives a very good idea of the topics and helps in better understanding of the concepts. Attending lectures is always the best thing.
Try to get a good grasp of the geometrical concepts early on (directions of various fields, sheets, flows etc) as they are critical, and not always entirely obvious to the beginner, to later calculations and concepts.

What advice would you like to give to future participants? (I worked: 15-17 timmar/vecka)
Study constantly
well the professor really knows how to keep the class interactive with questionnaires during the lectures! fun course really, if you're interested in learning about space, you should definitely take it. although having a decent background in Maxwell equations and its concepts would prove really useful.

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)
Fantastic course, thank you very much!

Is there anything else you would like to add? (I worked: 9-11 timmar/vecka)
/
Kudos to Savvas for his helpfulness.

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)
Overall, I feel that the course provided me a great learning experience.

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)
No

SPECIFIC QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course?
Answer above
The approaches taken were usually physically/mathmatically motivated but were also still immediately practical. Very cool!
The mix of learning activities. The mock exams really helped prepare for the exam and it was a great addition which also gave feedback without counting to the grade.
Interesting topics, lot's of real world examples, and a very broad and conceptual introduction to the topics rather than going straight to heavy physics calculations.

What would you suggest to improve?

What would you suggest to improve?
Answer above
One comment on the covid exam arrangements - I think there were too many people in the room and not enough spacing (between rows) and ventilation.
See above
More mandatory hand-in exercises, as there isn't a lot of calculation done in the course before the exam week. I feel like I understand the concepts better if I get to sit down and apply them to a problem. Another thing that I would have liked to see in the course would be a more in depth look into various instruments that could be used to measure the phenomenon described in the course. Maybe a small instrument/experiment design project of some sort?

What advice would you like to give to future participants?

What advice would you like to give to future participants?
Answer above
See above
Try to get a good grasp of the geometrical concepts early on (directions of various fields, sheets, flows etc) as they are critical, and not always entirely obvious to the beginner, to later calculations and concepts.

This year, due to the COVID-19 situation the teaching was fully done via ZOOM. How did you think that worked in general?

This year, due to the COVID-19 situation the teaching was fully done via ZOOM. How did you think that worked in general?
As nothing else is possible it's ok. I think it doesn't change anything.
I think it was handled well. Everything being recorded was a good aspect, because sometimes we cannot attend a lecture. I believe despite COVID the course was still well done and we were able to learn from it.
I actually really liked this teaching format. I could watch the recorded lectures, pause and take notes and go back if I missed anything. You can't do that with normal lectures of course. I also liked the zoom tutorials which I think worked better than you might imagine. It was easy to interact with the other students via zoom.
Very good! Well done. Us lagging behind the schedule was the only negative.
Worked well.
It worked for the lextures, but it was more difficult for the group workshops because we can't see each other and minigroup works takes longer to do entirely.
It worked well. Using polls and the group work was a good way of making the course interactive.
I think it worked well. The lectures with Thomas worked well, the exercises were a bit harder to follow sometimes since you can't see the solutions, but since they were published later it was fine.
I think it worked nicely. In many ways I preferred it, as it cut down on my commute and it led to all lectures being recorded. This meant that I didn't have to take notes and could pay more attention to the material, as well as always go back to re-watch sections that I might have forgotten or didn't understand well to begin with.
i think it was conducted perfectly regardless of the zoom lectures, the professor made sure of interactive classes and a guest lecture.. i dont think there was any other issue with that perspective.
It owrked fine, the files of canvas where listed in a confusing way though

Is there anything else you would like to add?

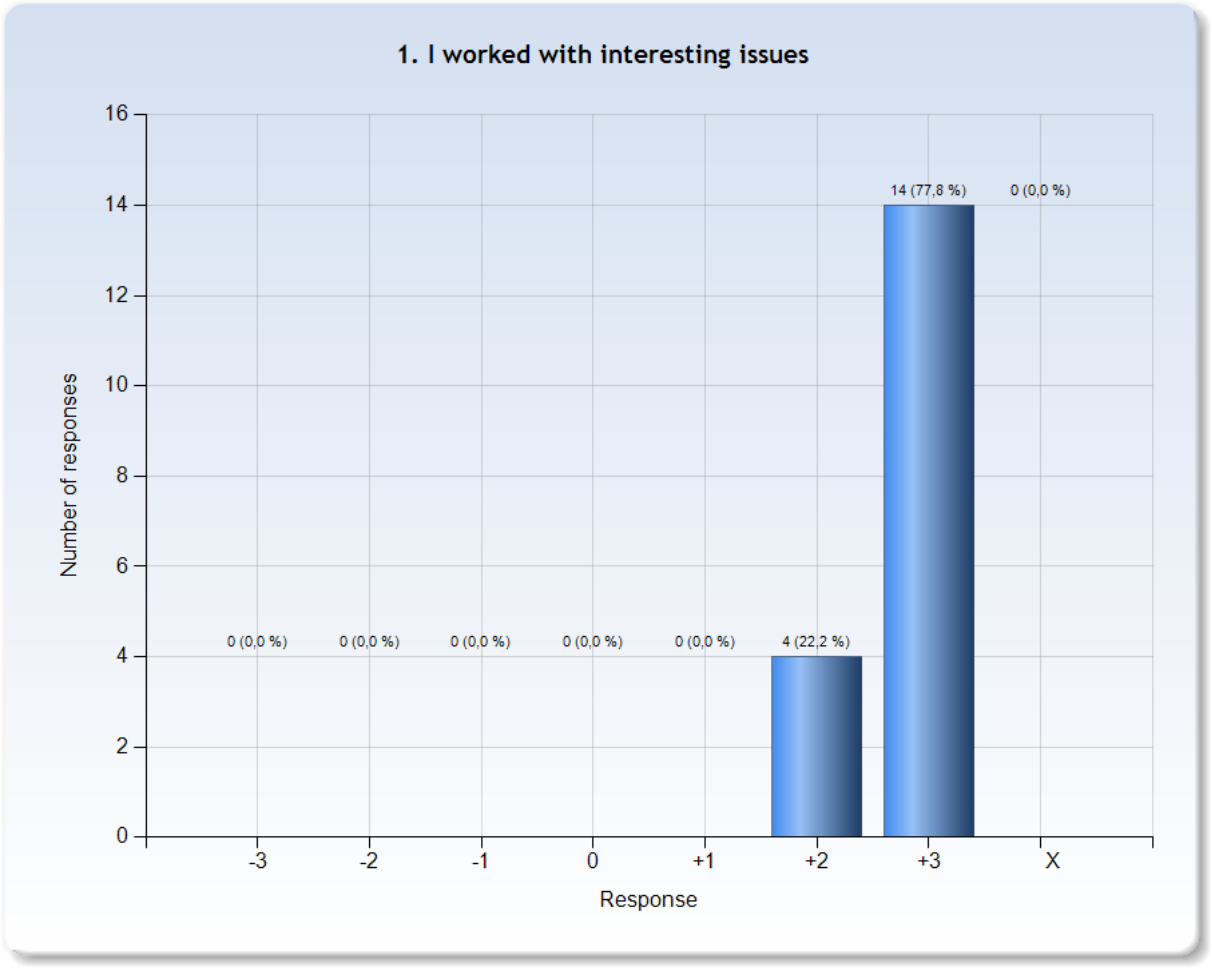
Is there anything else you would like to add?
I wouldn't have been able to take this course if it hadn't been online due to covid. I think universities could use this as an opportunity and expand their online learning options to reach many more students than would otherwise be possible.
Good work with the course

RESPONSE DATA

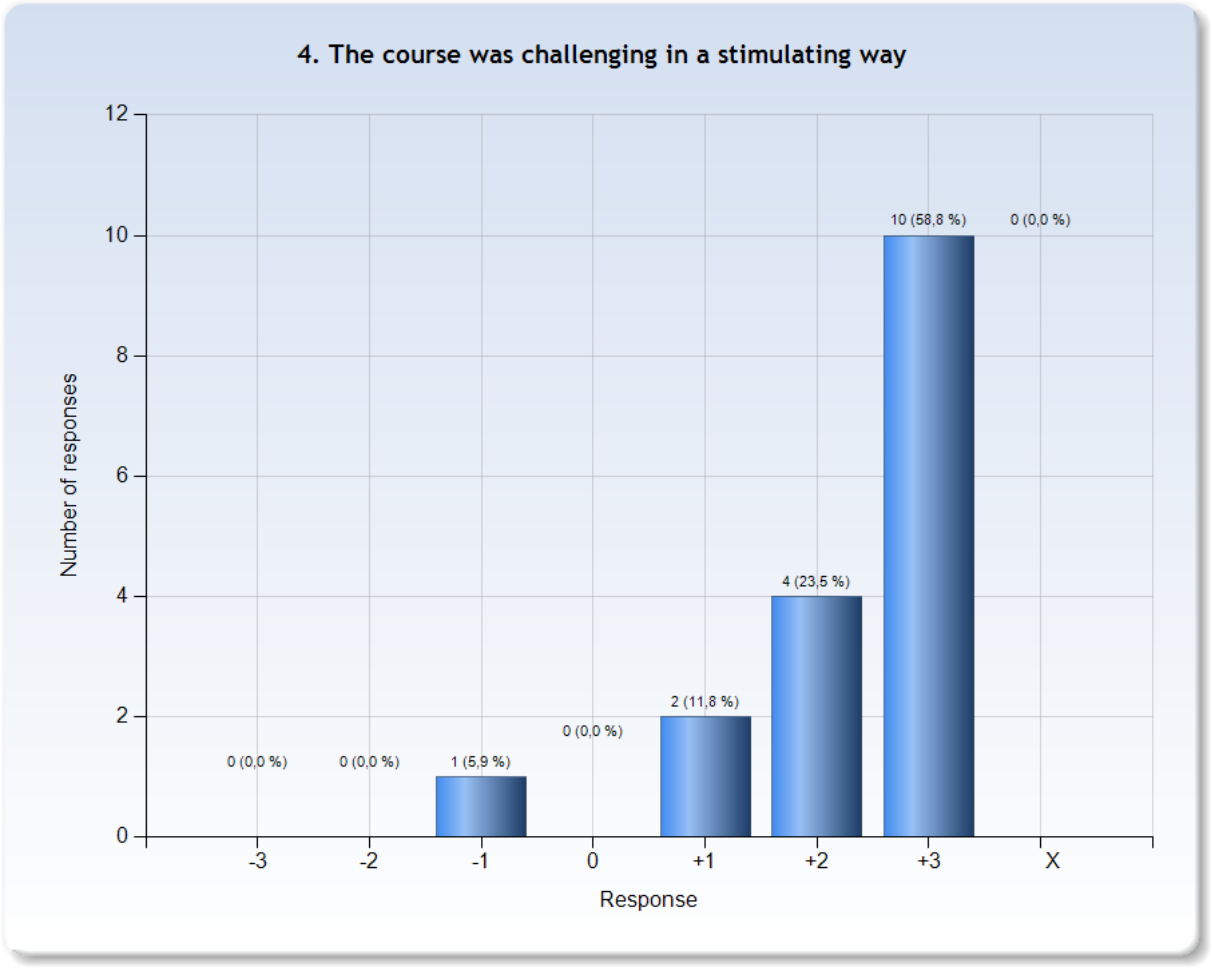
The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-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

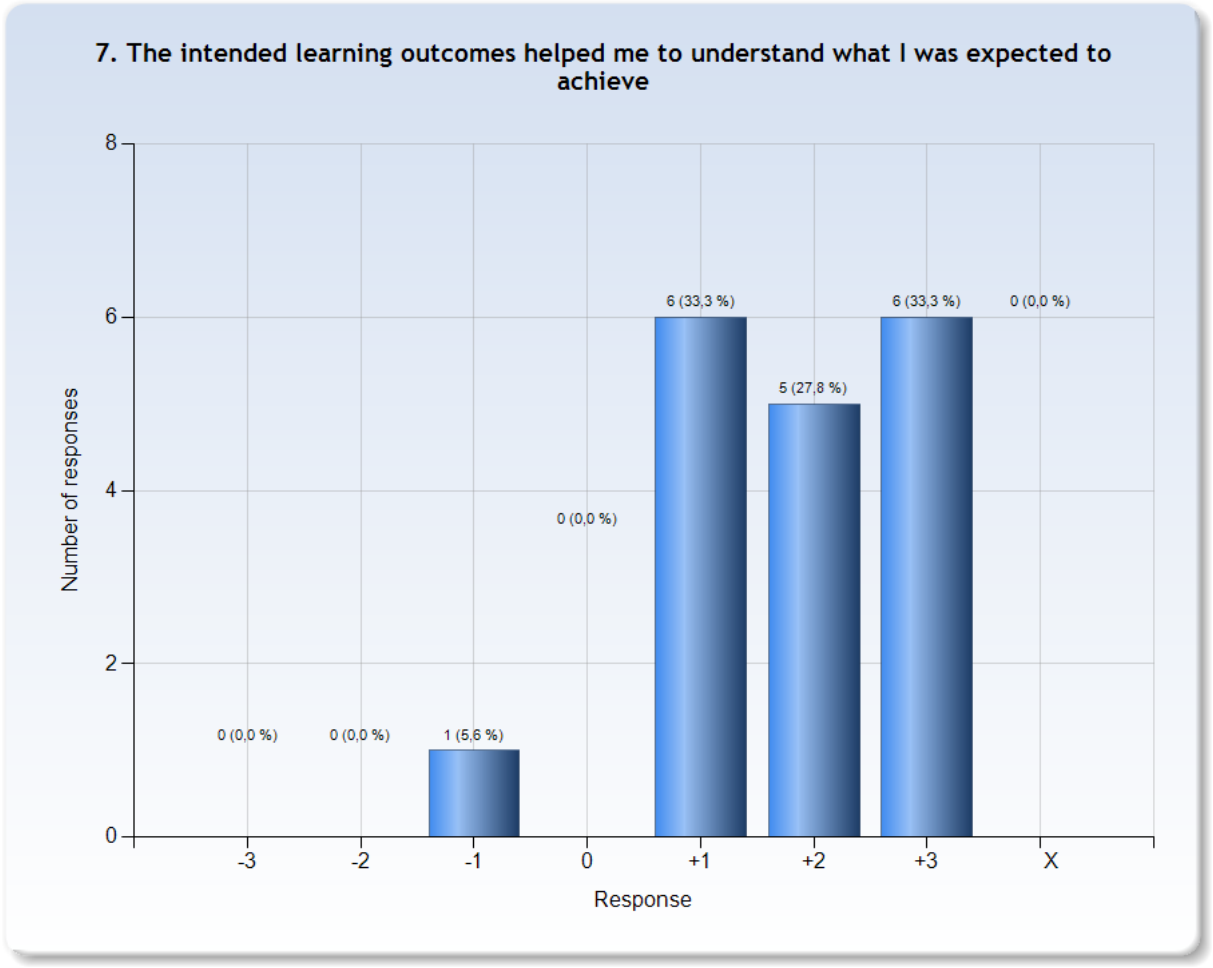

1. I worked with interesting issues
16
14
12
10
8
6
4
2
0
Number of responses
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
4 (22,2 %)
14 (77,8 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

Comments



Comments

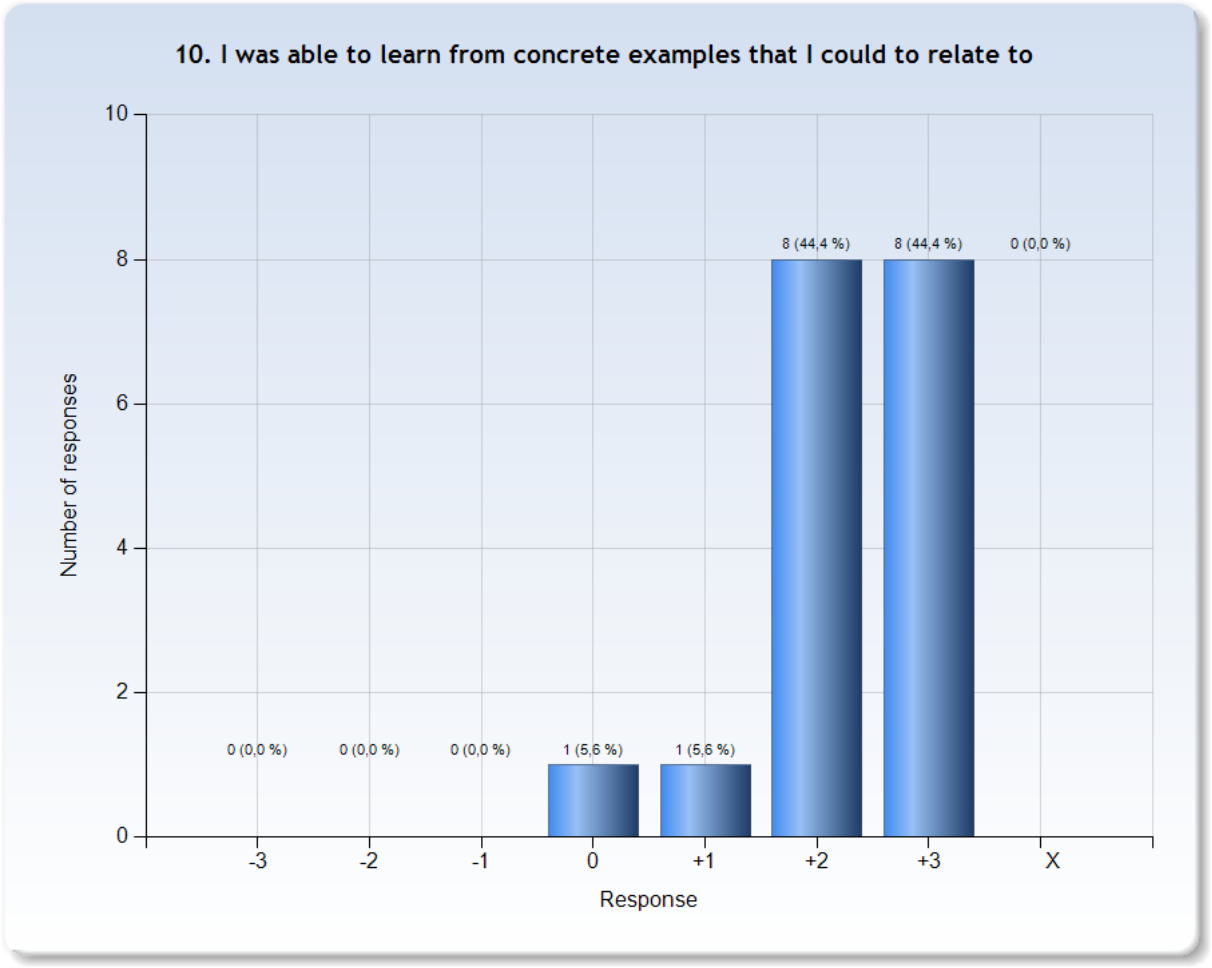
Comments (My response was: -1)
The course was fairly easy



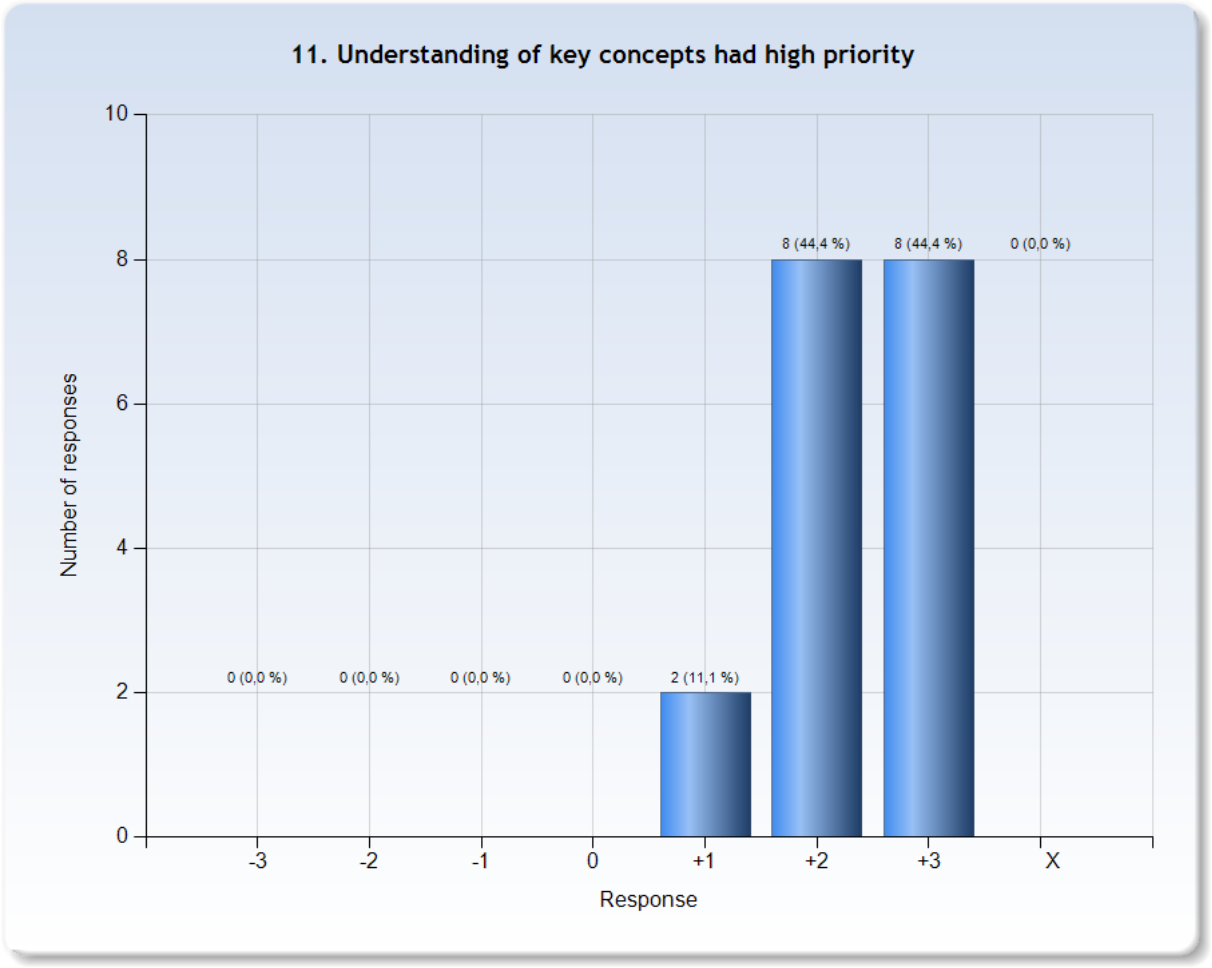
Comments

Comments (My response was: -1)

It felt like that at first. Practicing on previous exams confirmed this, but when the actual exam came it felt like it was much harder.

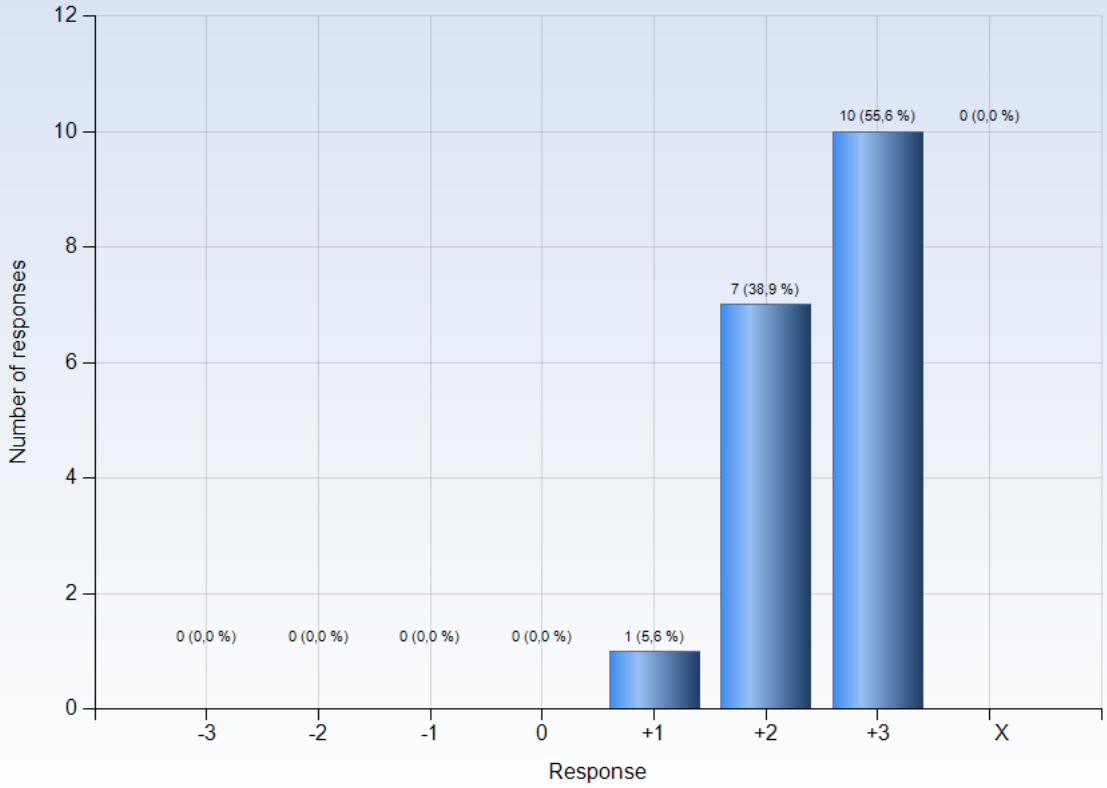

10. I was able to learn from concrete examples that I could to relate to
Number of responses
10
8
6
4
2
0
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
1 (5,6 %)
1 (5,6 %)
8 (44,4 %)
8 (44,4 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

Comments

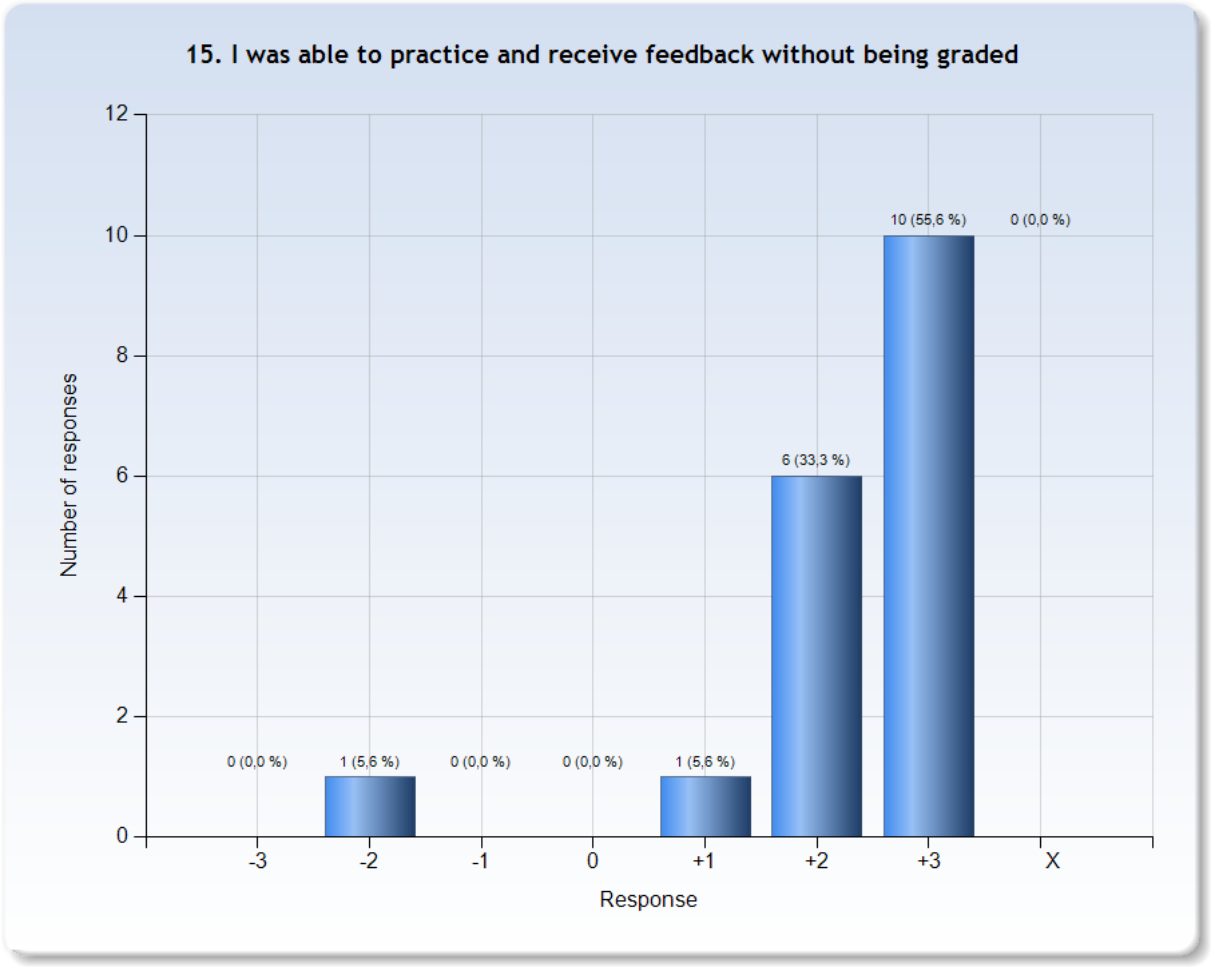

11. Understanding of key concepts had high priority
Number of responses
10
8
6
4
2
0
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
2 (11,1 %)
8 (44,4 %)
8 (44,4 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

Comments

12. The course activities helped me to achieve the intended learning outcomes efficiently



Comments


15. I was able to practice and receive feedback without being graded
Number of responses
12
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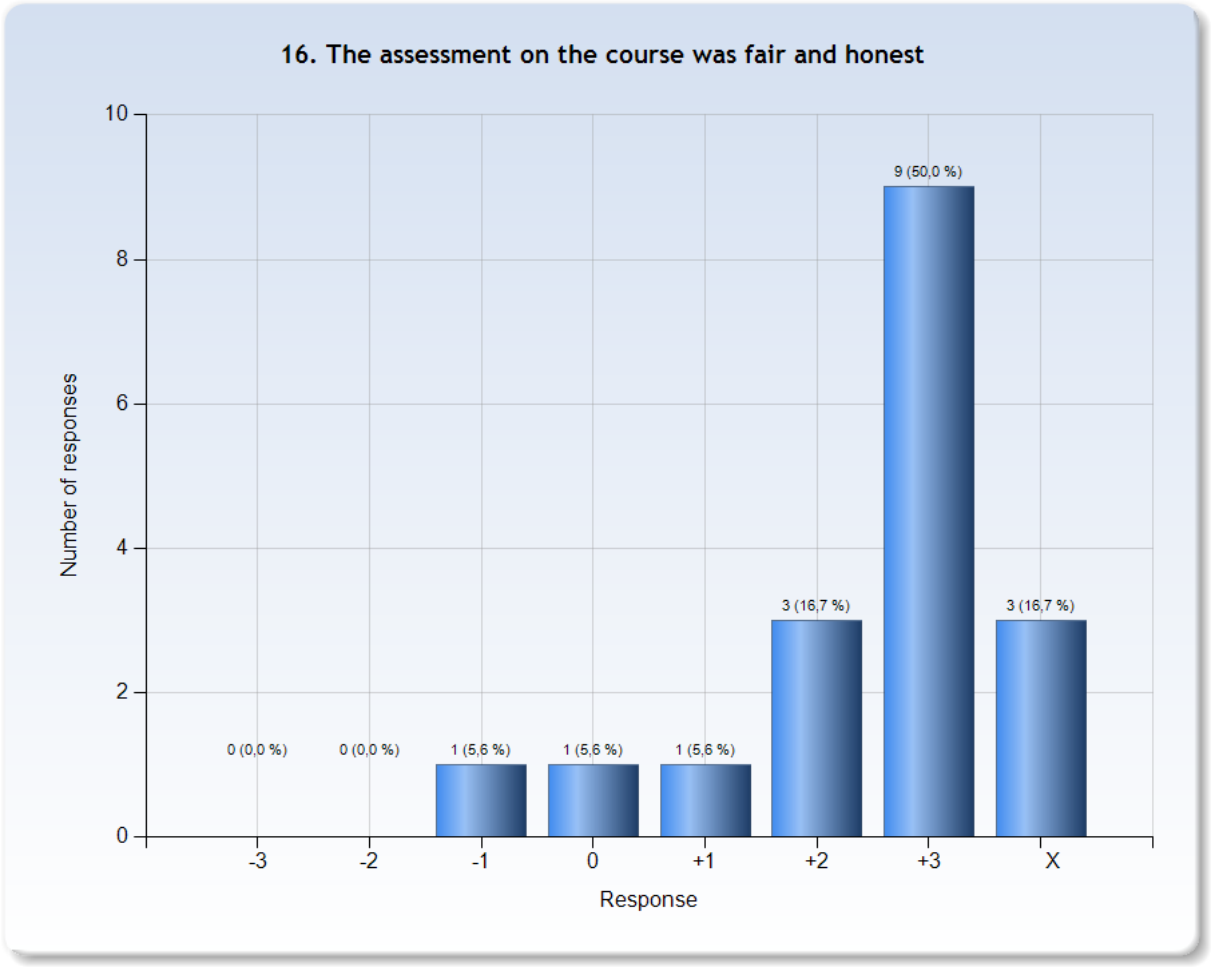
0 (0,0 %)
1 (5,6 %)
6 (33,3 %)
10 (55,6 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

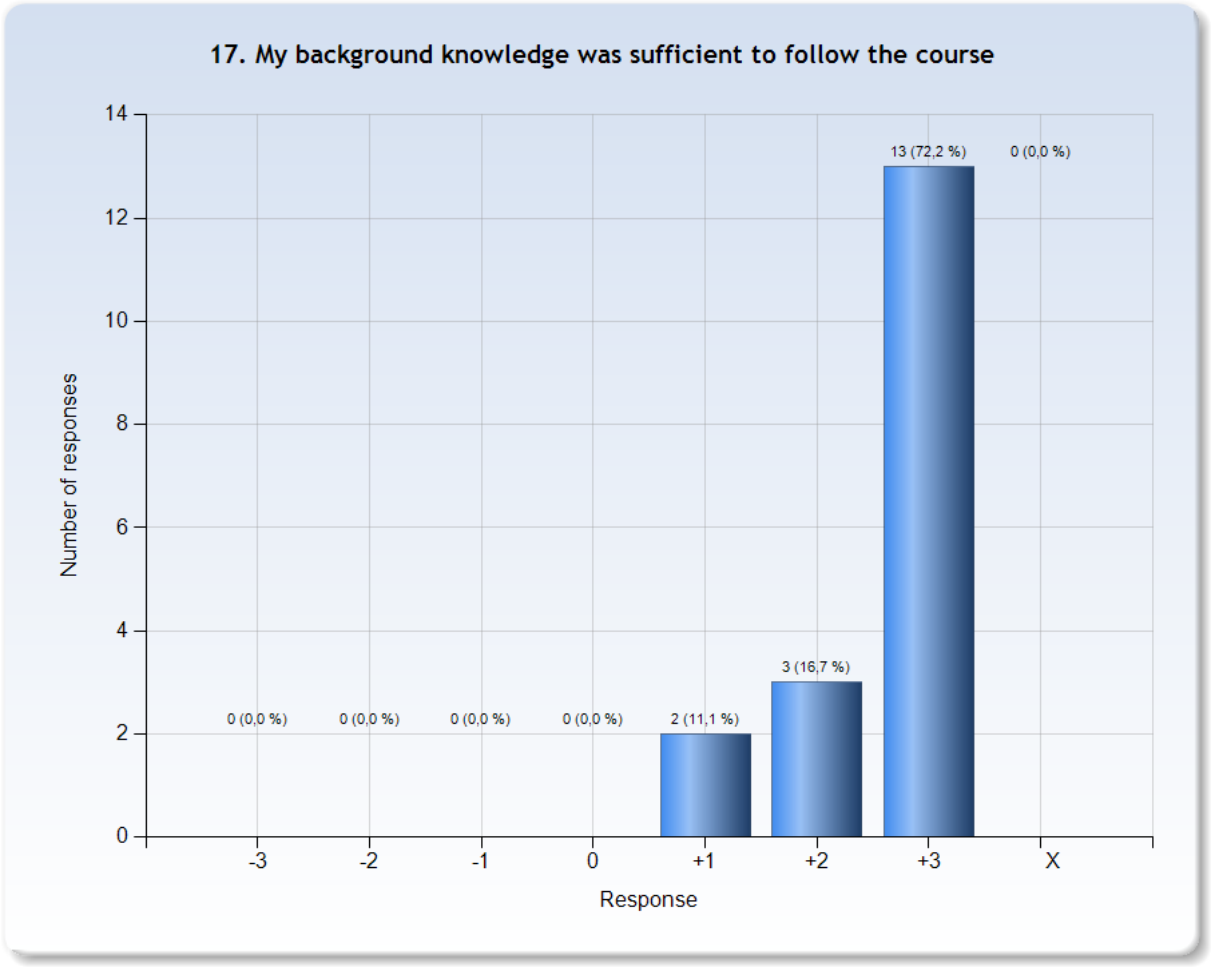
Comments



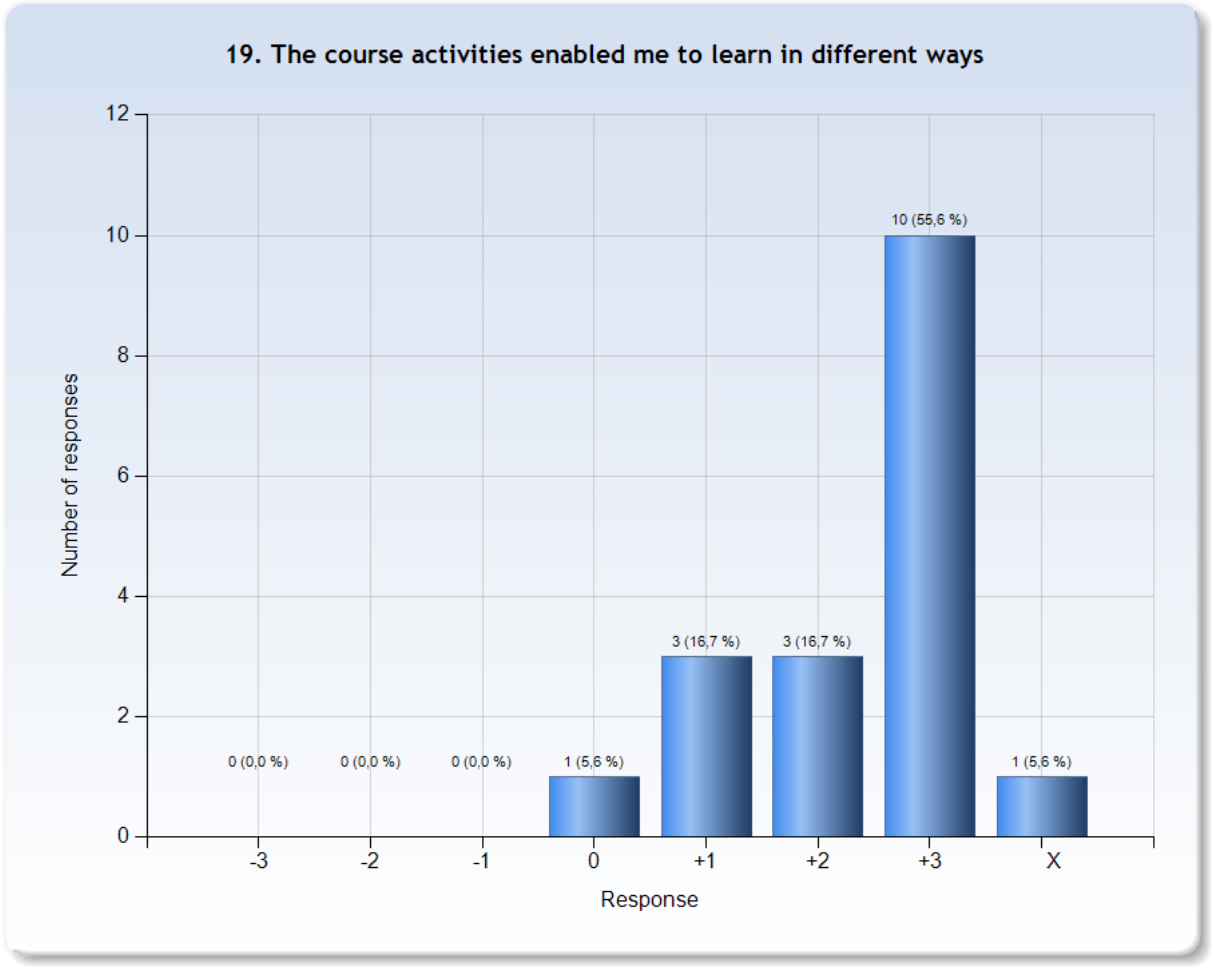
Comments

Comments (My response was: -1)
Written exam too hard compared to the old ones,that I used to train

Comments (My response was: 0)
It contained a number of elements that were quite different to the focus pf the course, requiring a deeper knowledge than the rest of the problems.


17. My background knowledge was sufficient to follow the course
Number of responses
14
12
10
8
6
4
2
0
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
2 (11,1 %)
3 (16,7 %)
13 (72,2 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

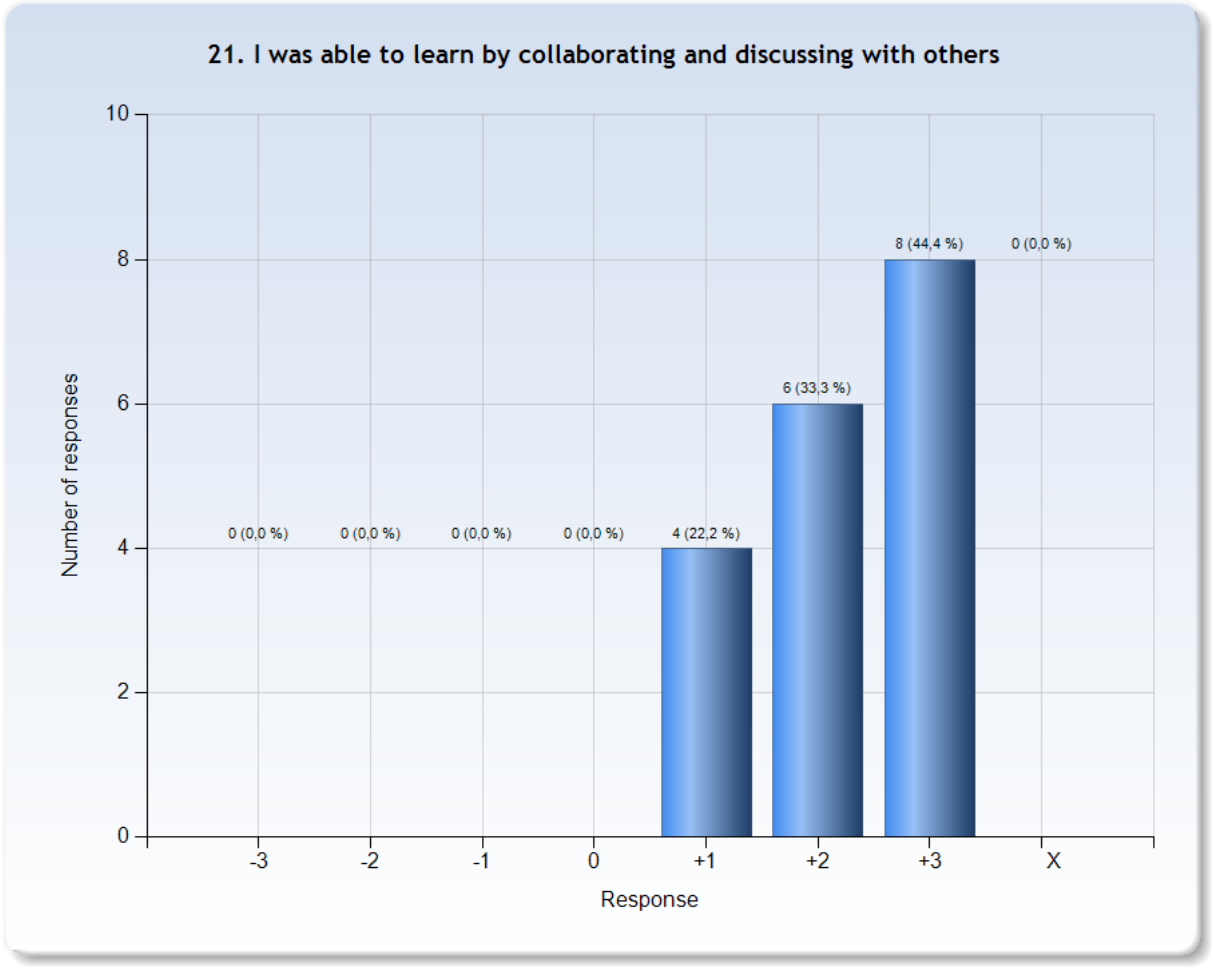
Comments



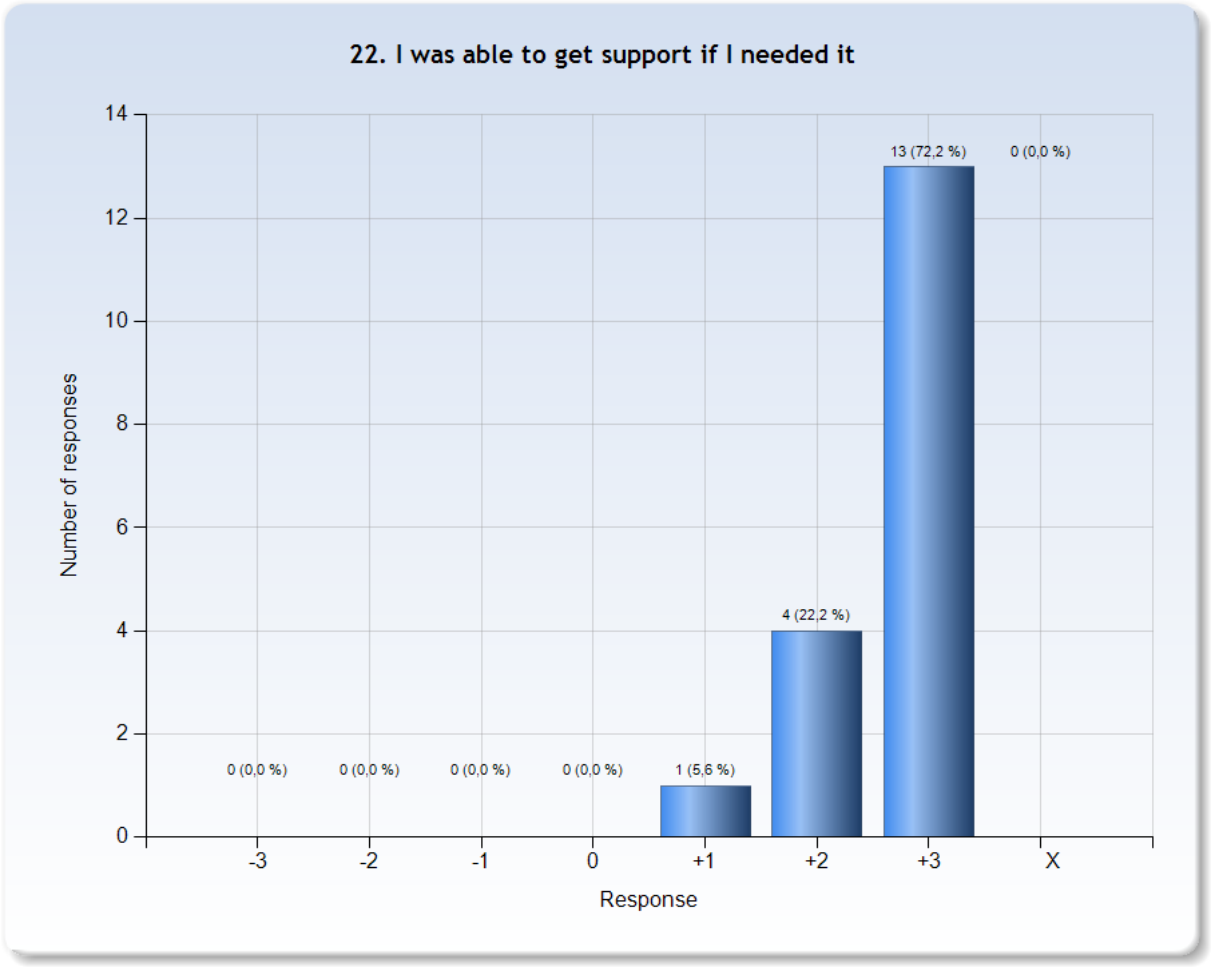
Comments

Comments (My response was: X)

I don't feel this way, however I didn't do any of the mock examples, so I don't feel like I can grade this fairly.


21. I was able to learn by collaborating and discussing with others
Number of responses
10
8
6
4
2
0
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
4 (22,2 %)
6 (33,3 %)
8 (44,4 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X
Response

Comments


22. I was able to get support if I needed it
Number of responses
Response
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
0 (0,0 %)
1 (5,6 %)
4 (22,2 %)
13 (72,2 %)
0 (0,0 %)
-3
-2
-1
0
+1
+2
+3
X

Comments