

# Course evaluation for Paper Mechanics (SE2152, 8.0 credits, HT 2020/21)

*Artem Kulachenko (Examiner)*

## Background

The year 2022 was the first time the course was offered in the modified form based on the previous course SE2152. The main changes were:

- Extending the product range covered in the course to general fibrous materials including 3D materials on expense of traditional paper products.
- Making links to other natural fiber sources.
- Introducing the Granta Materials software for sustainability evaluation in the labs and homework.
- Introduction of the guest lecture from the innovative industries such as BComp and TetraPak.
- Revising the course goals and activities to reflect the changes.

The course encompassed 20 lectures, 3 labs, 10 homework assignments (including 3 lab reports). There were 3 main lecturers in the course, Artem Kulachenko, Sören Östlund, and Mikael Nygård. The intentions and the principles behind the book were about learning through case studies, although not all the lectures followed that principle.

The grade was given as a weighted average of the grades earned in the home assignments. The maximum grade that could be earned through homework was A, but any grade could be improved by two steps through oral examination.

The total number of students who took the course during these 2 years was 15. The attendance of the lectures was close to 100% throughout the course. The majority of the students were engaged in studies and received a good grade. The course received very positive feedback from the students in general.

The course round in 2020 was all digital and even a part of 2021. Therefore, the accumulated evaluation is presented over the two years.

## Problems identified in the course rounds

### **Problem 1: Availability of lecture notes before class**

Due to a number of changes, the notes were not always available before the class.

**Solution implemented:** The notes were uploaded before the class.

### **Problem 2: Gender misbalance**

The course puts the prerequisites aligned with the mechanical engineering program, where females are under-represented.

**Solution proposed:** Highlight the course during the master student recruitment as it was equally well valued by both genders in the past.

### **Problem 3: Early physical labs**

Labs 1 and 2 were combined and the content of Lab 2 was ahead of the course material.

**Solution implemented:** Labs were separated, and it was perceived better by the students.

### **Problem 4: Computer lab is too complex**

Despite the fact the lab is separate on two occasions, it is still perceived as difficult.

**Solution proposed:** Revise the instructions of the computer lab, help the assistant.

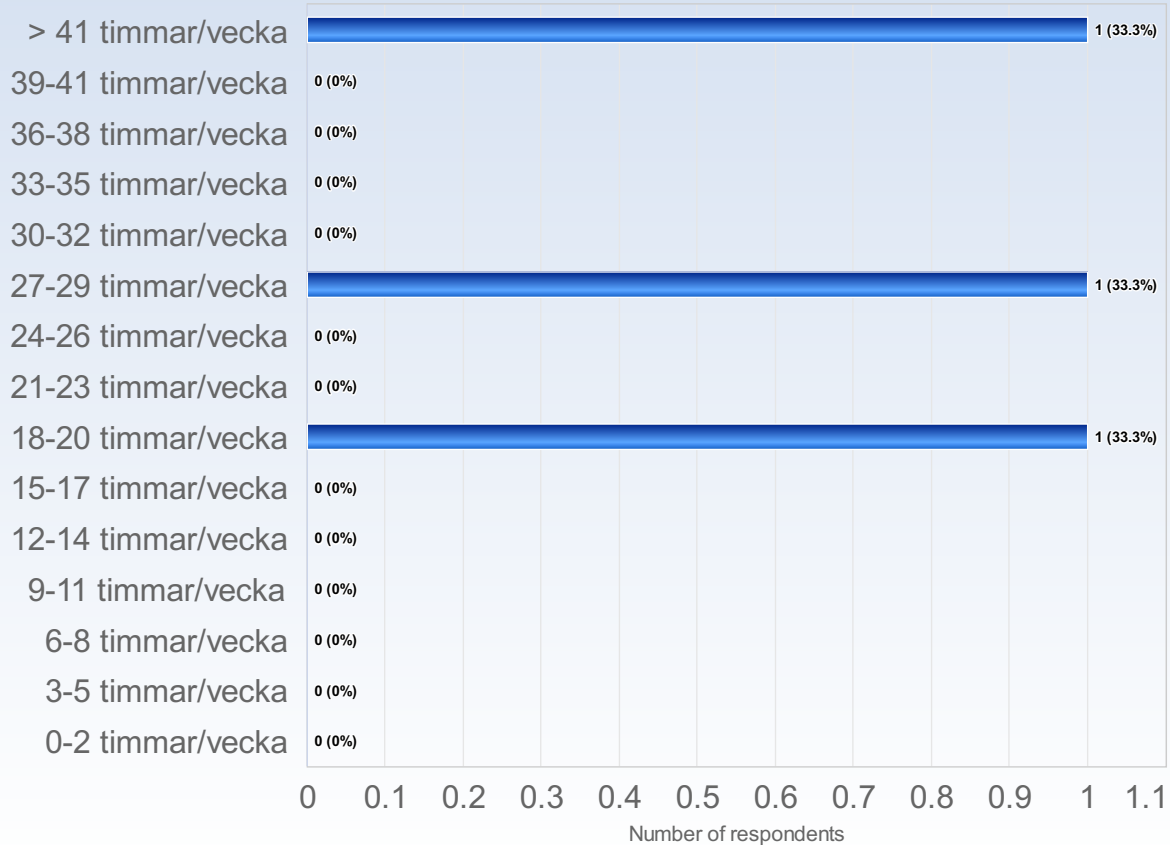
## **Students' responses to course evaluation questionnaire**

# SE2152 - 2020-12-23

Antal respondenter: 10  
Antal svar: 3  
Svarsfrekvens: 30,00 %

## ESTIMATED WORKLOAD

On average, how many hours/week did you work with the course (including scheduled hours)?



### Comments

#### Comments (I worked: 18-20 timmar/vecka)

The homework questions have taken the most time, since they require critical thinking and build on the material provided in the textbook and the lectures.

#### Comments (I worked: 27-29 timmar/vecka)

Normally I began with the homework more than one week in advance, and spend 2-4 days before the deadline more than 8h per day.

#### Comments (I worked: > 41 timmar/vecka)

Most of the time was spent on homework assignments and laboratory reports. Some was spent on reading the relevant textbook chapters before each assignment.

## LEARNING EXPERIENCE

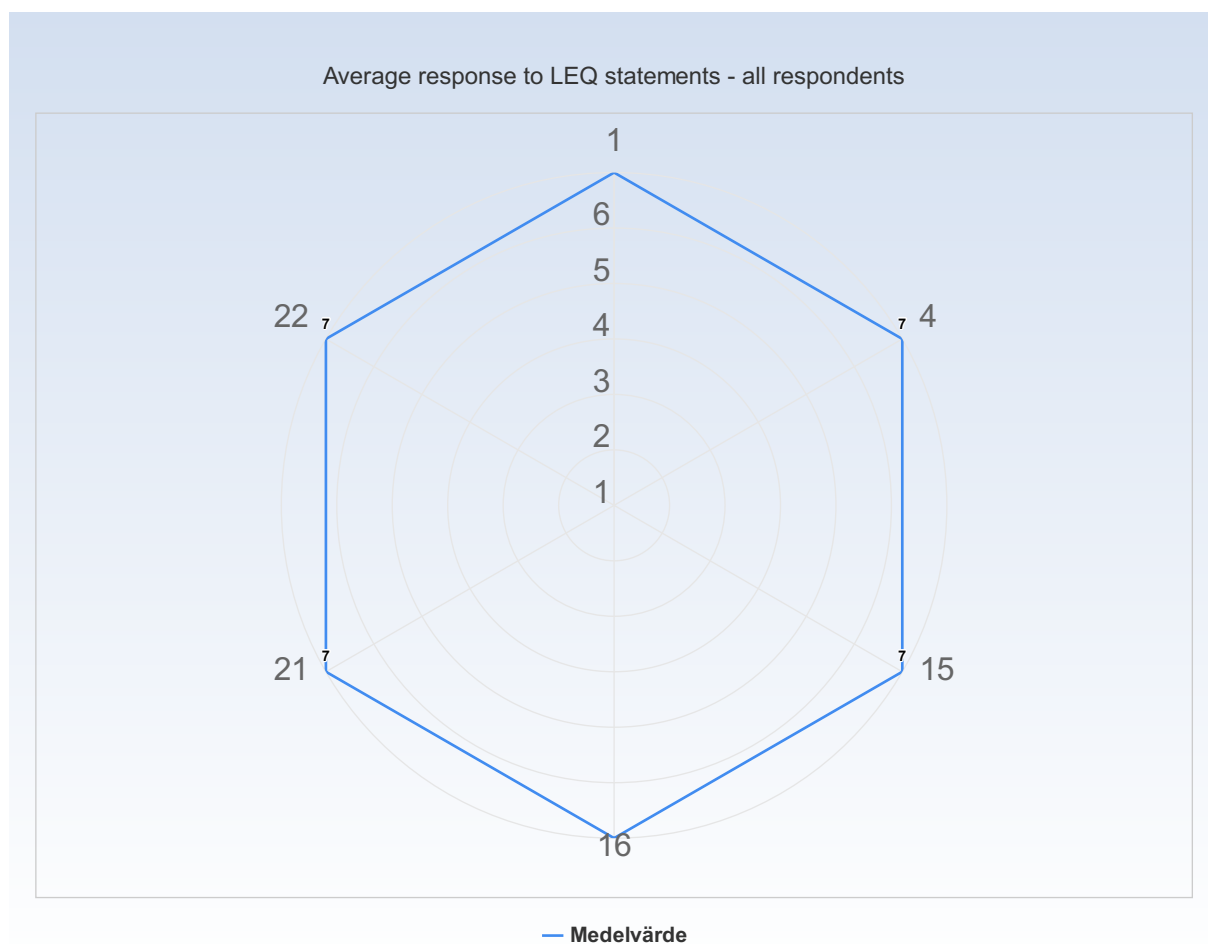
The polar diagrams below show the average response to the LEQ statements for different groups of respondents (only valid responses are included). The scale that is used in the diagrams is defined by:

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

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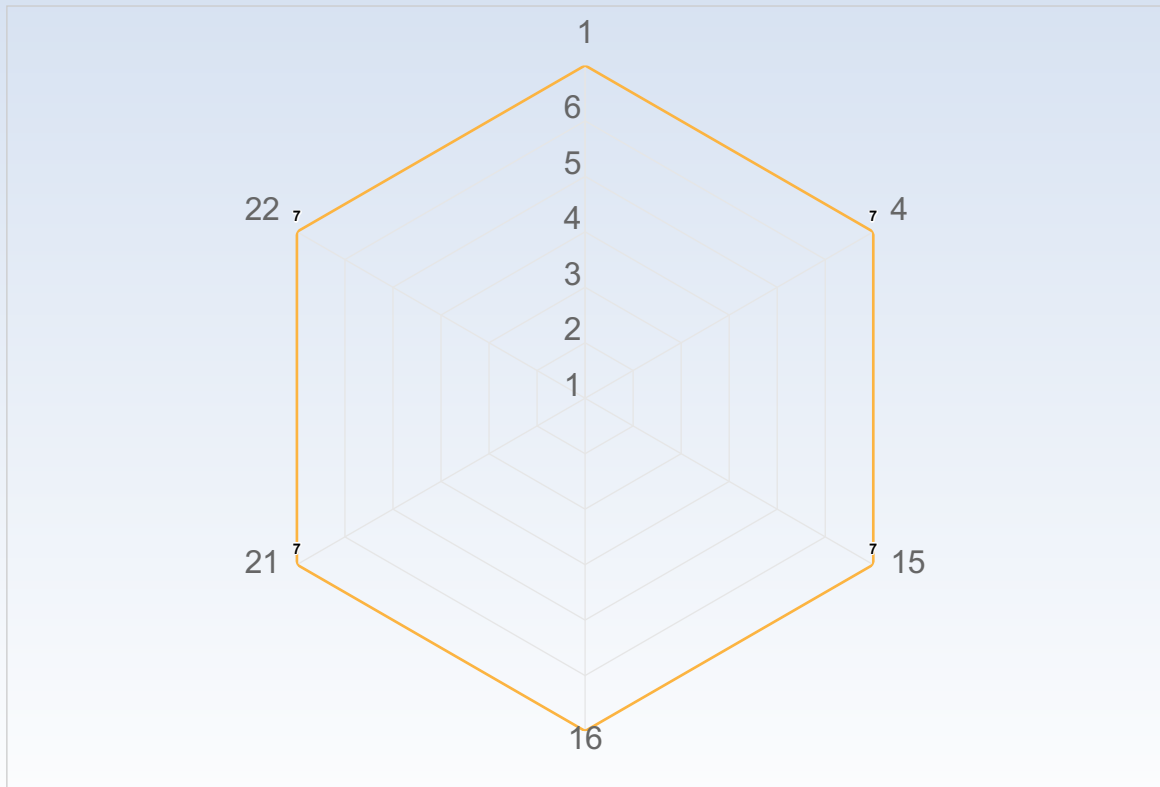
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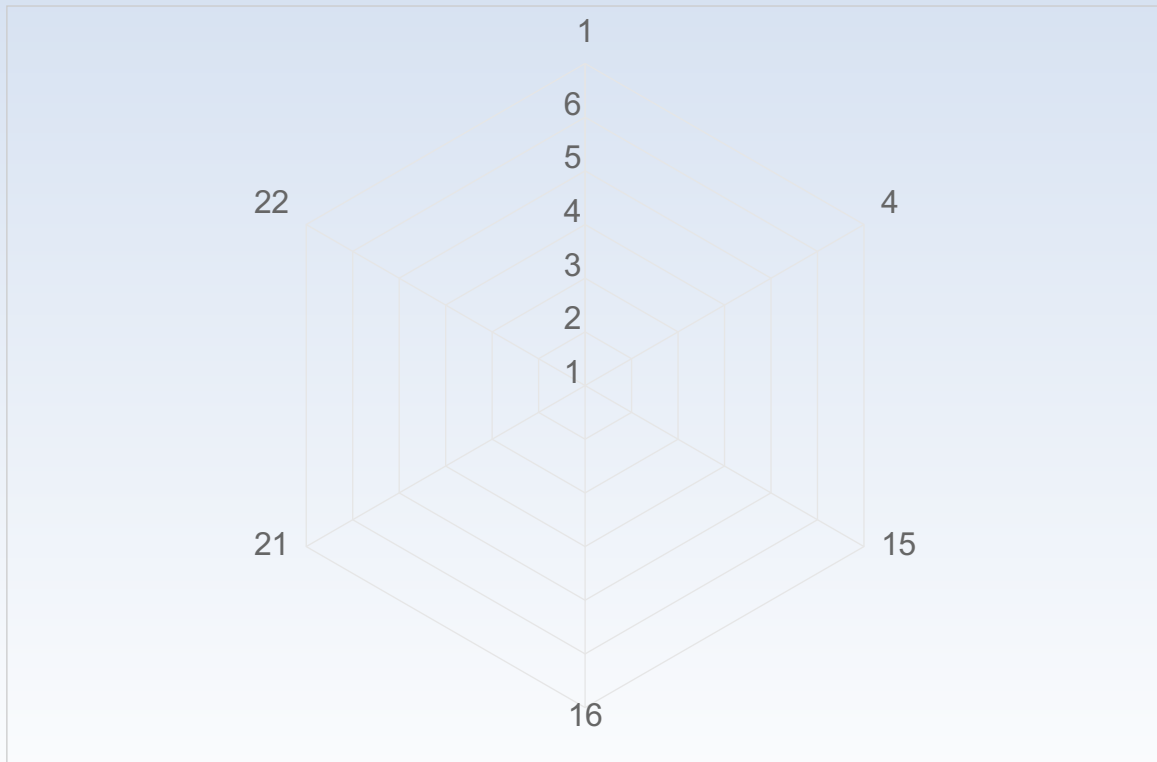
Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.

Average response to LEQ statements - per gender



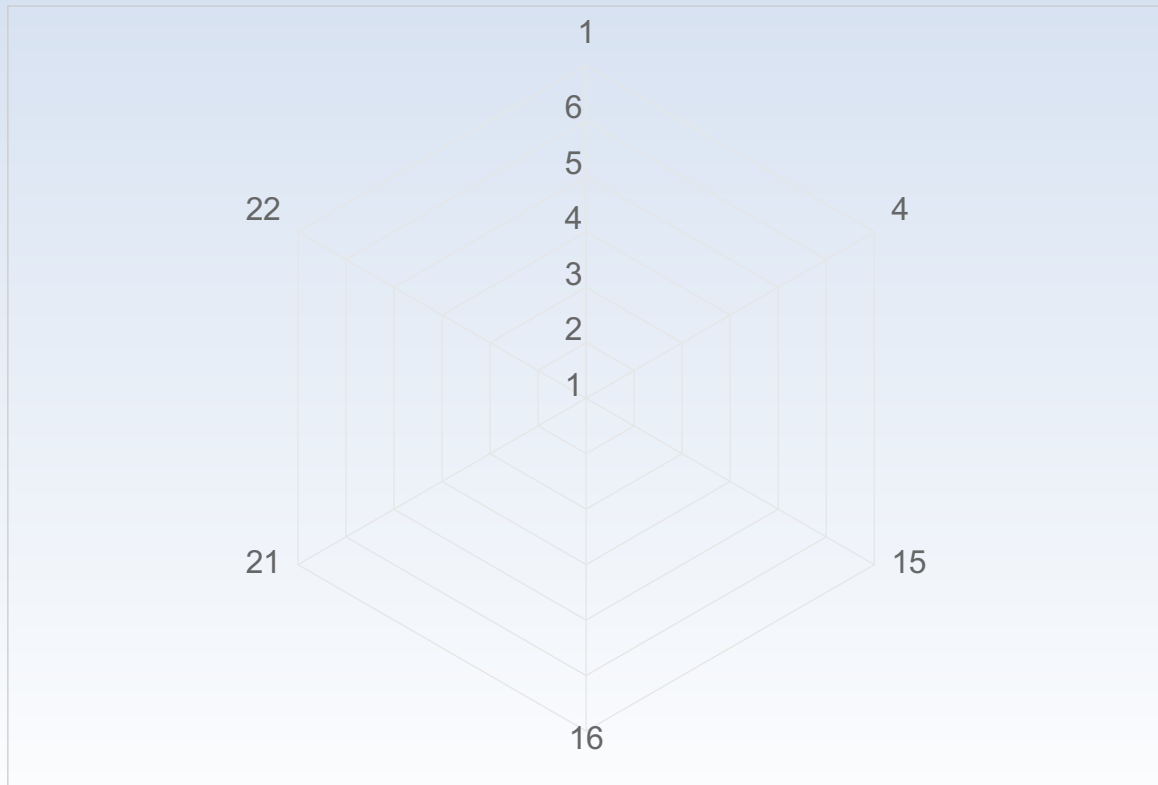
— Kvinna — Man — Annat — Vill ej uppge

Average response to LEQ statements - per type of student



— Internationell masterstudent — Internationell utbytesstudent — Svensk student i årskurs 1-3  
— Svensk student i årskurs 4-5 — Annan typ av student — Vill ej uppge

Average response to LEQ statements - per disability



— Ja — Nej — Vill ej uppge

Comments

Comments (My response was: Ja)

To be graded by ten homeworks rather than one final exam is preferred.

## GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 18-20 timmar/vecka)

The openness of Professors Artem and Sören to answer any doubts so quickly and enthusiastically was very motivating and reassuring. Their feedback was always beneficial, and I appreciated it a lot.

What was the best aspect of the course? (I worked: 27-29 timmar/vecka)

The content of the course and the teachers.  
Wide range of topics were covered within solid mechanics.

Things I liked:

- video recorded lectures
- lecture slides before lectures
- be graded by several homeworks rather than on exam
- experimental testing at RISE and labs
- the lecture from Bcomp was inspirational, since it covered another type of fiber network material than paper
- appreciate the flexibility to extend or change the deadline of the homeworks
- became better at finding appropriate research papers and to read and interpret them

What was the best aspect of the course? (I worked: > 41 timmar/vecka)

The homework assignments and laboratory work were the most important parts of the course since they allowed us to practise the course material that was taught during the class lectures.

What would you suggest to improve?

What would you suggest to improve? (I worked: 27-29 timmar/vecka)

- always lecture notes on canvas before a lecture

What would you suggest to improve? (I worked: > 41 timmar/vecka)

Maybe laboratory 3 should be conducted earlier during the semester so that there is sufficient time to prepare its results for presentation during the seminar.

What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 18-20 timmar/vecka)

If something in the course is optional, like a homework to improve your grade, make an effort to solve it as all the questions were stimulating and I learned something new in every question!

What advice would you like to give to future participants? (I worked: 27-29 timmar/vecka)

- put in the work in the homework assignments

What advice would you like to give to future participants? (I worked: > 41 timmar/vecka)

The textbook is very useful so I would recommend students to read every relevant textbook chapter after its content is taught during the class lecture.

Is there anything else you would like to add?

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

Overall, the course was very well thought-out and one that must be considered, in my opinion. I have absolutely no regrets taking it, and I have left the course with a passion for the subject, rather than just more information.

Is there anything else you would like to add? (I worked: 27-29 timmar/vecka)

Simply great course..!

Is there anything else you would like to add? (I worked: > 41 timmar/vecka)

Overall, it was a really interesting course.

## SPECIFIC QUESTIONS

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## RESPONSE DATA

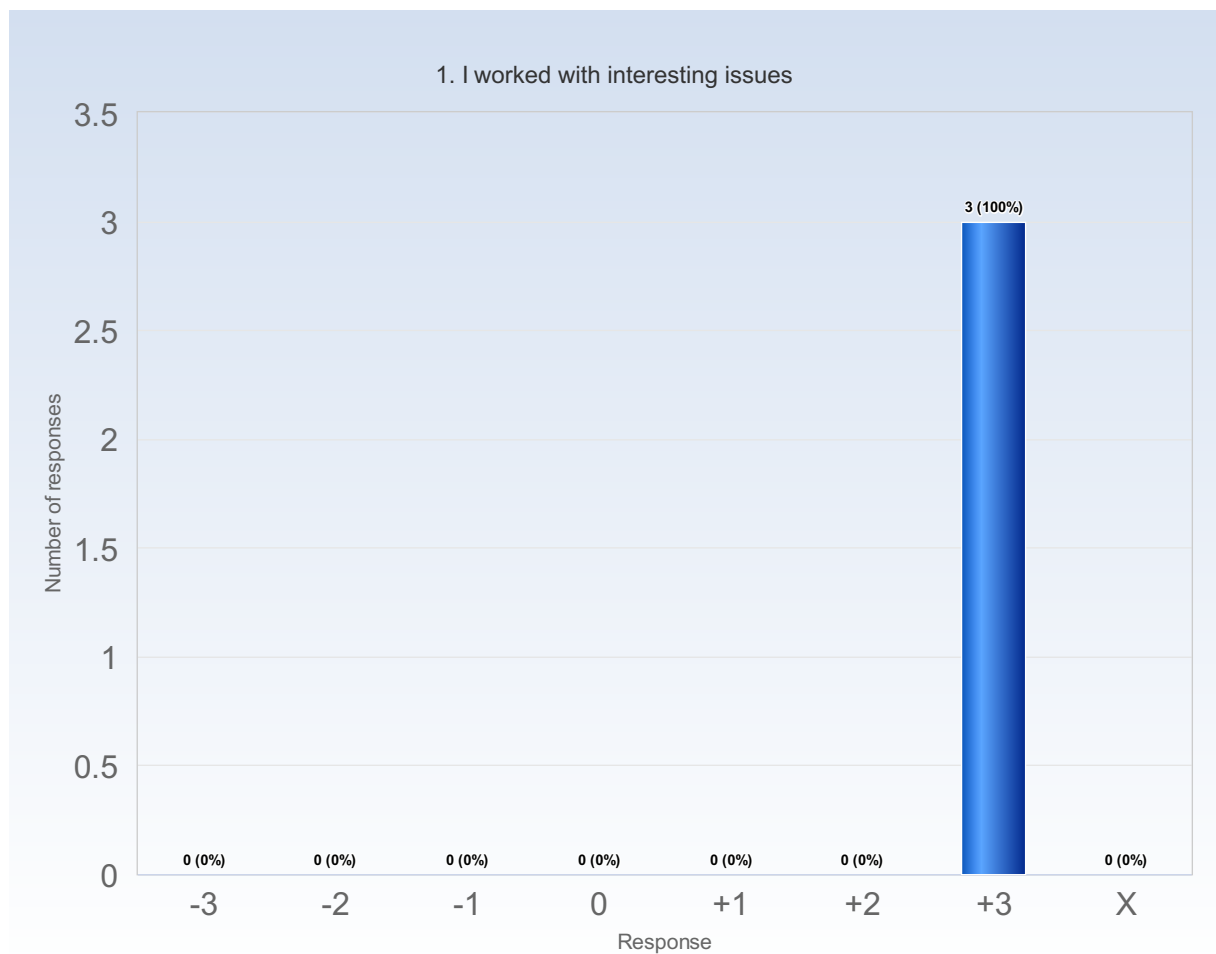
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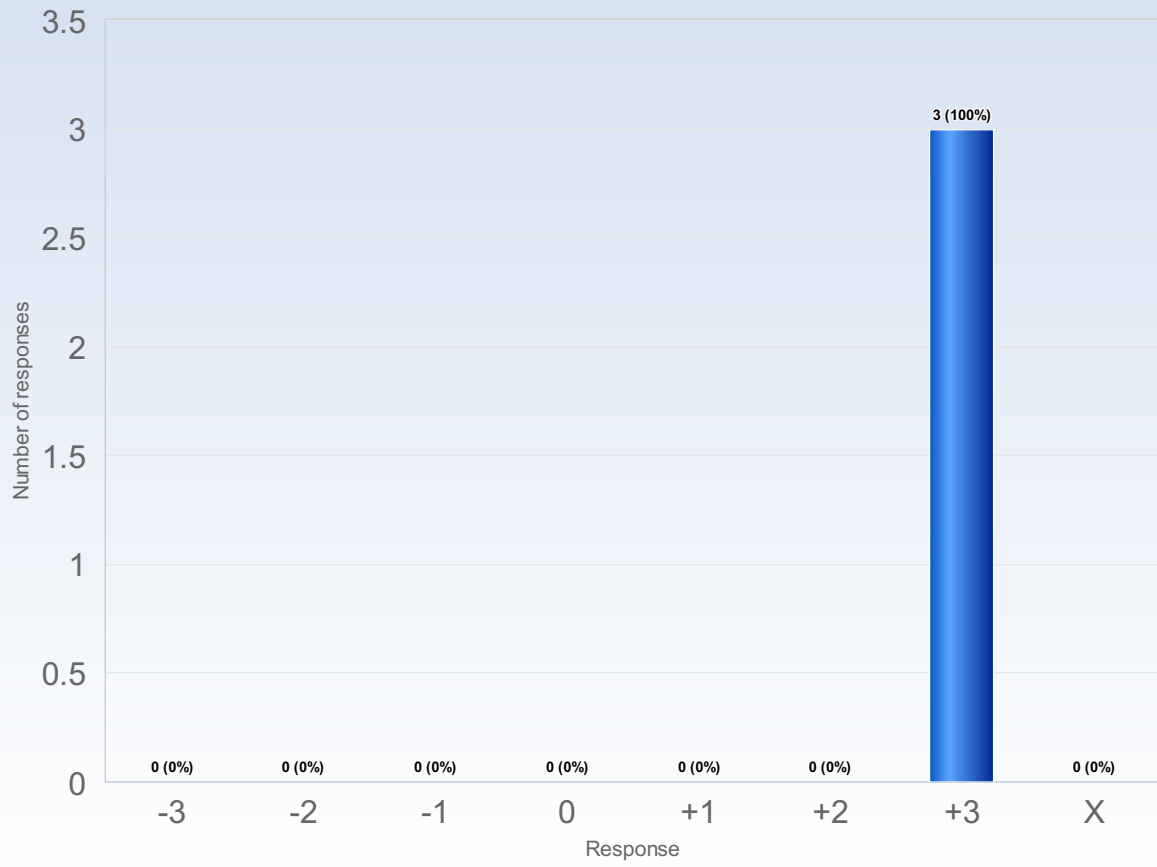
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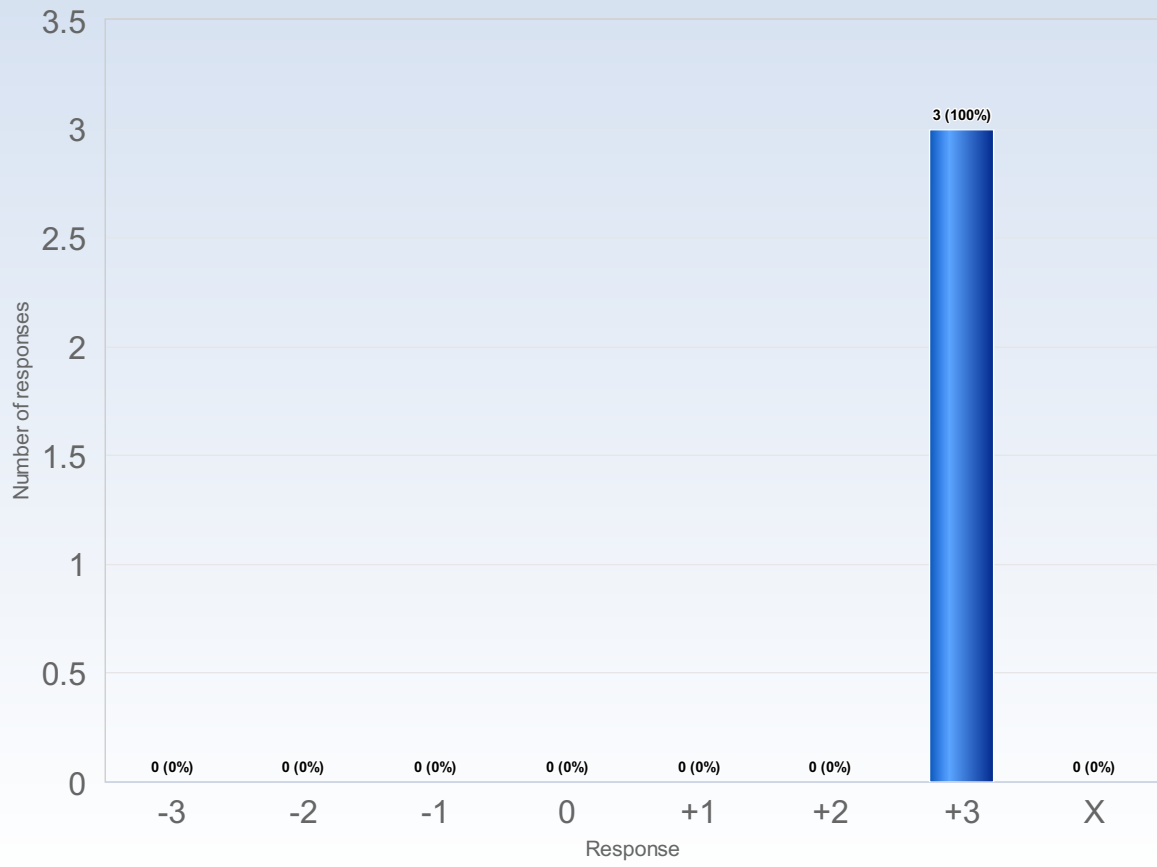
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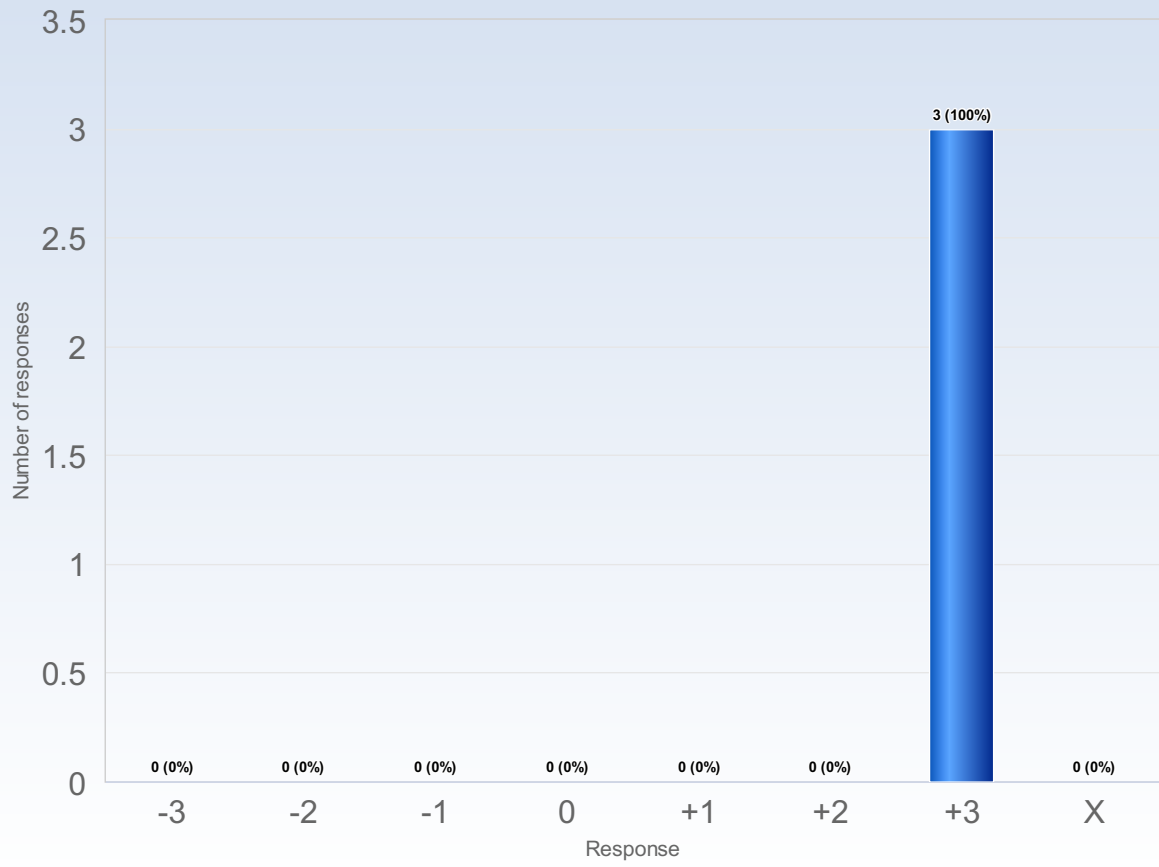
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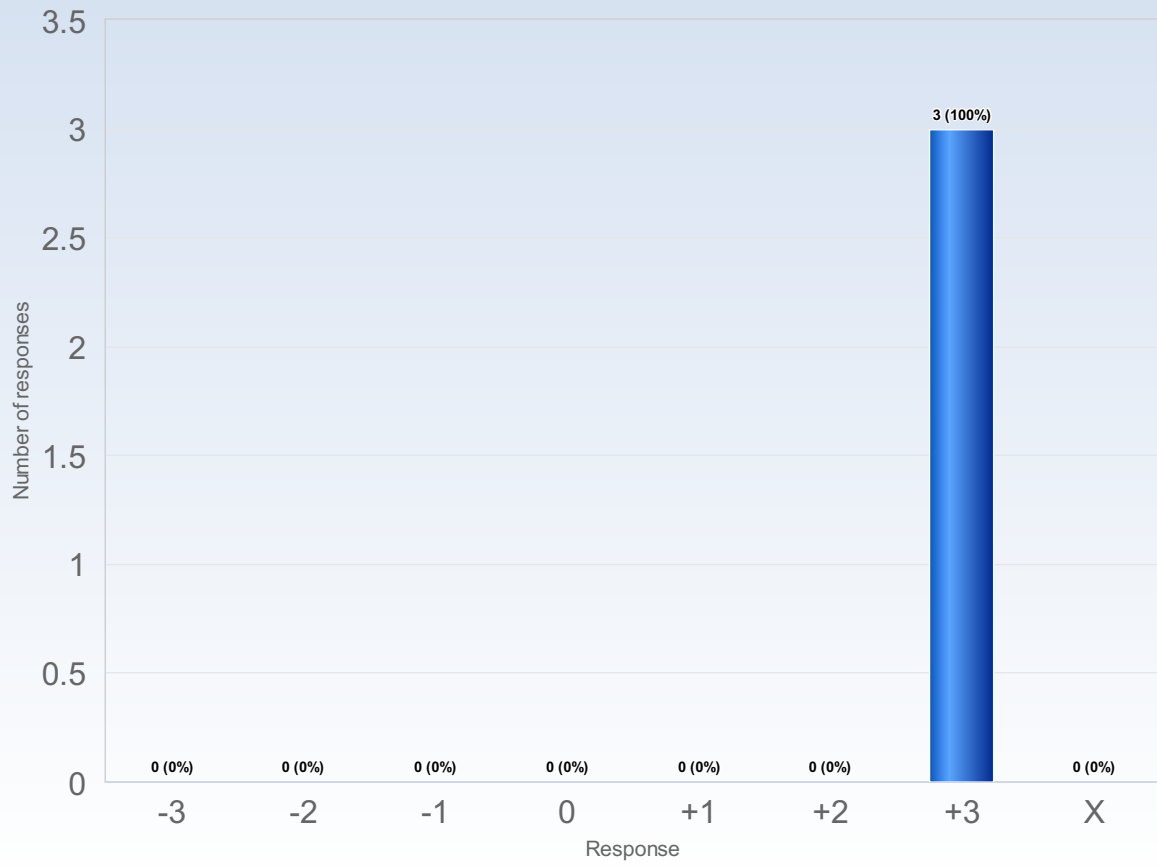
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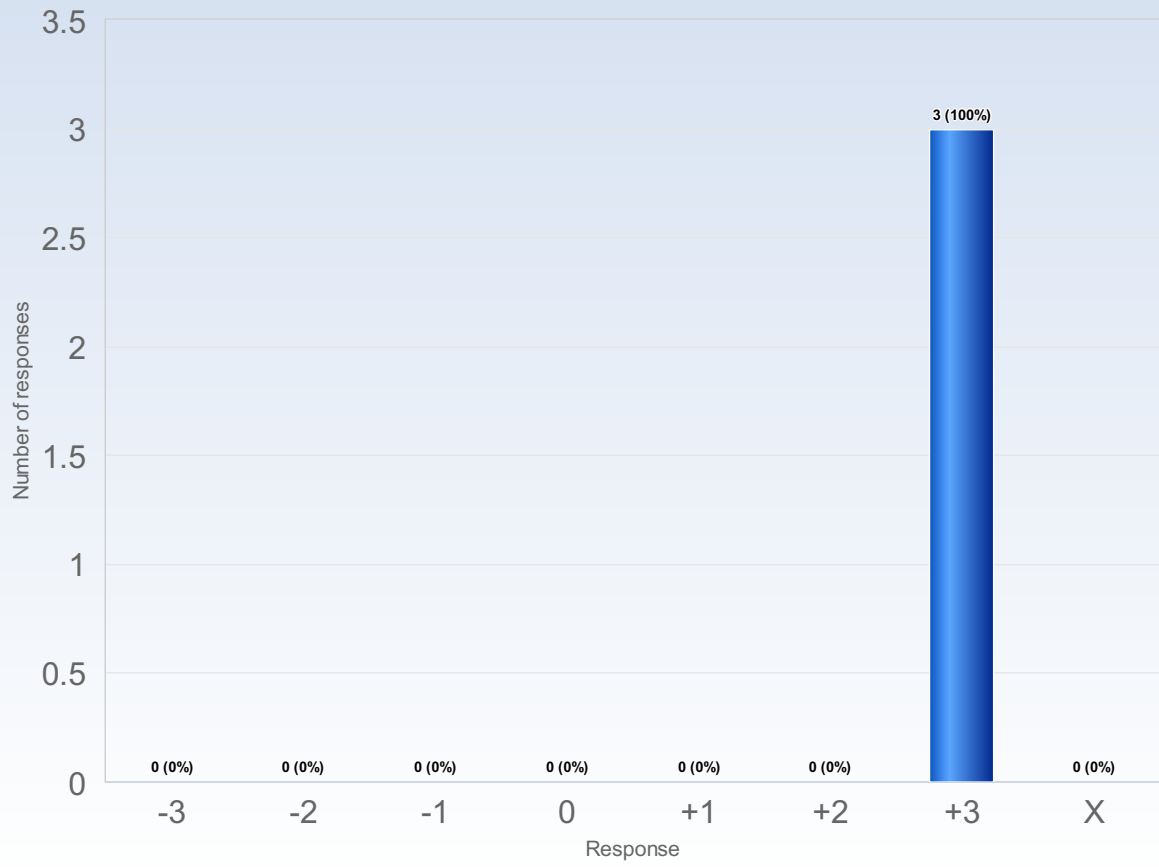
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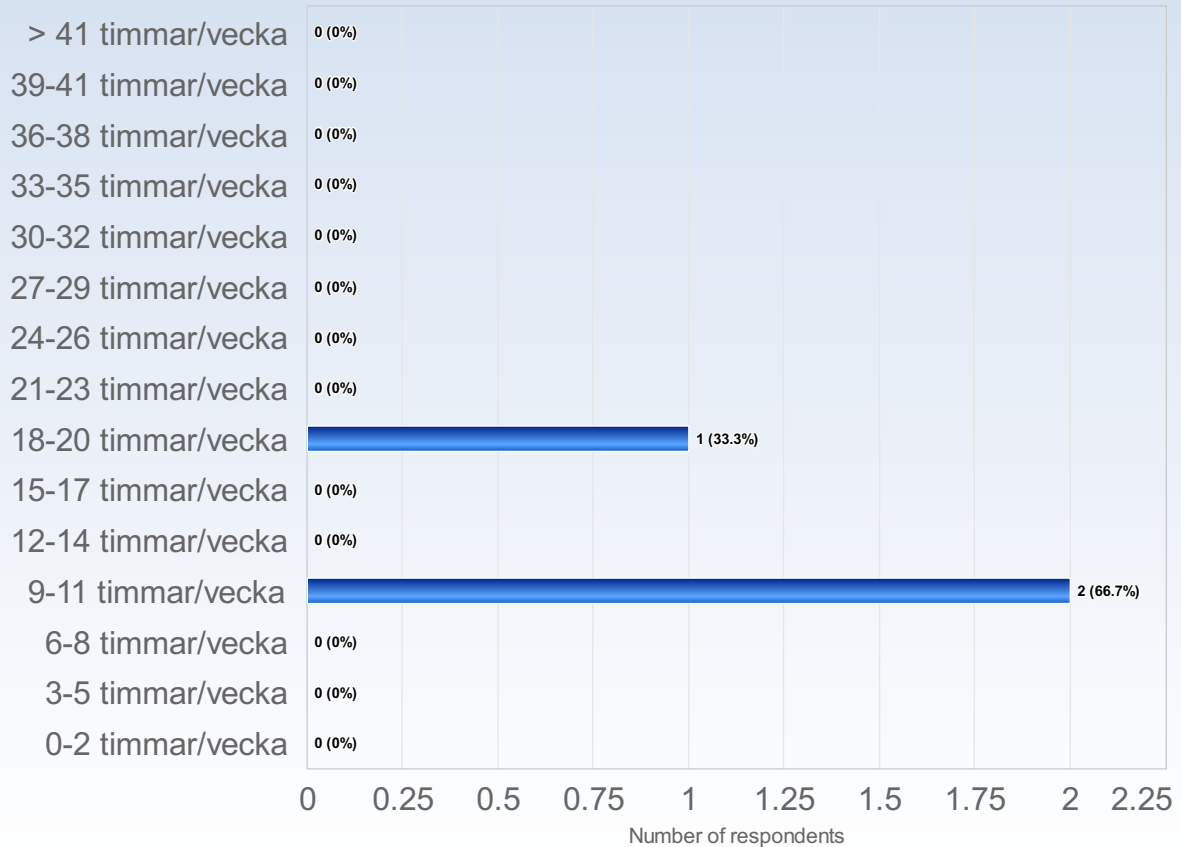


# SE2152 - 2022-01-14

Antal responder: 5  
Antal svar: 3  
Svarsfrekvens: 60,00 %

## ESTIMATED WORKLOAD

On average, how many hours/week did you work with the course (including scheduled hours)?



### Comments

Comments (I worked: 9-11 timmar/vecka)

I think the work load reflects the credits for the course really well, however the workload is a bit light in the beginning and higher in the end.

Total hours: 155.5 (over 16 weeks = 9 hours, 45 min per week)  
33 hours lectures  
66 hours home assignments  
6.5 hours labs  
40.5 hours lab report  
8 hours computer lab  
1.5 hours seminar

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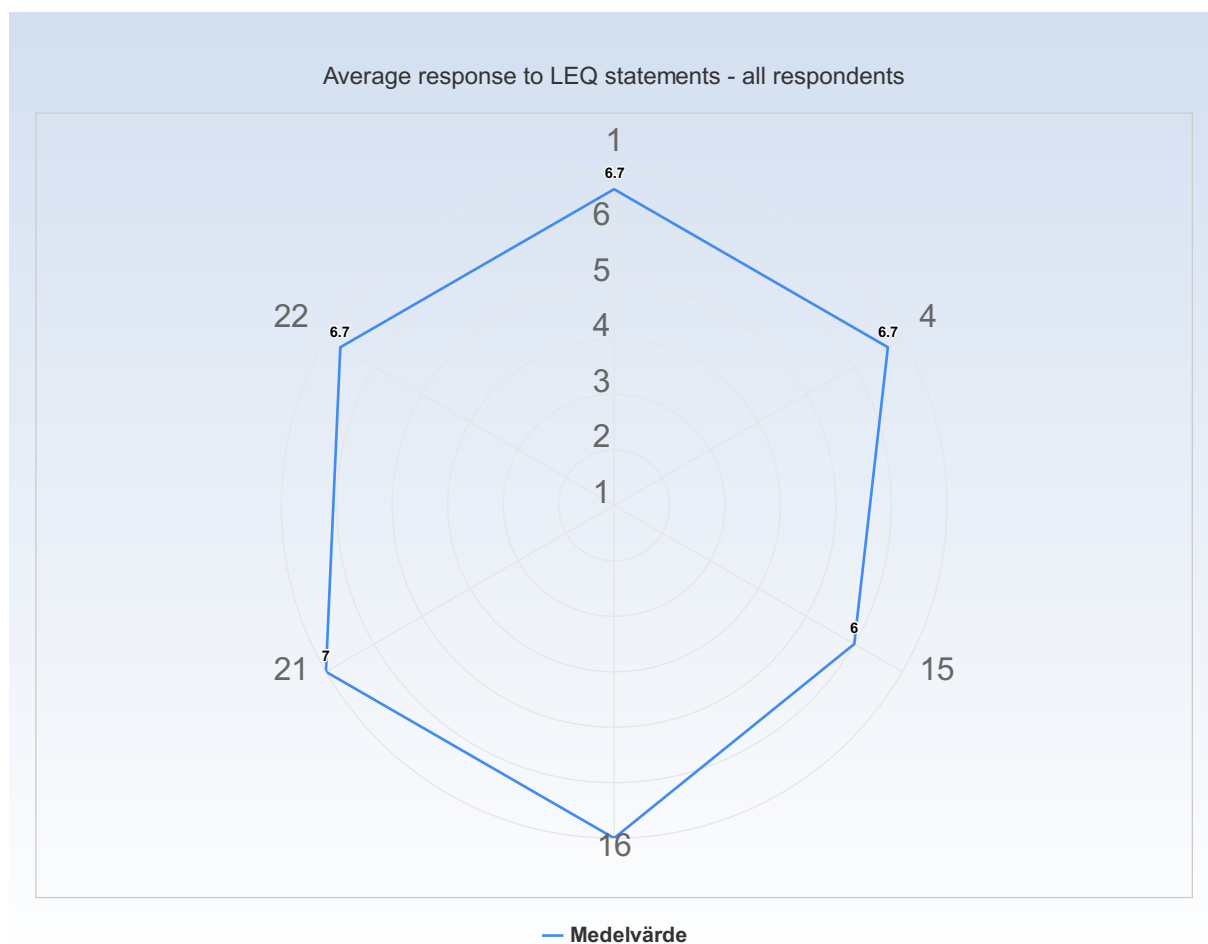
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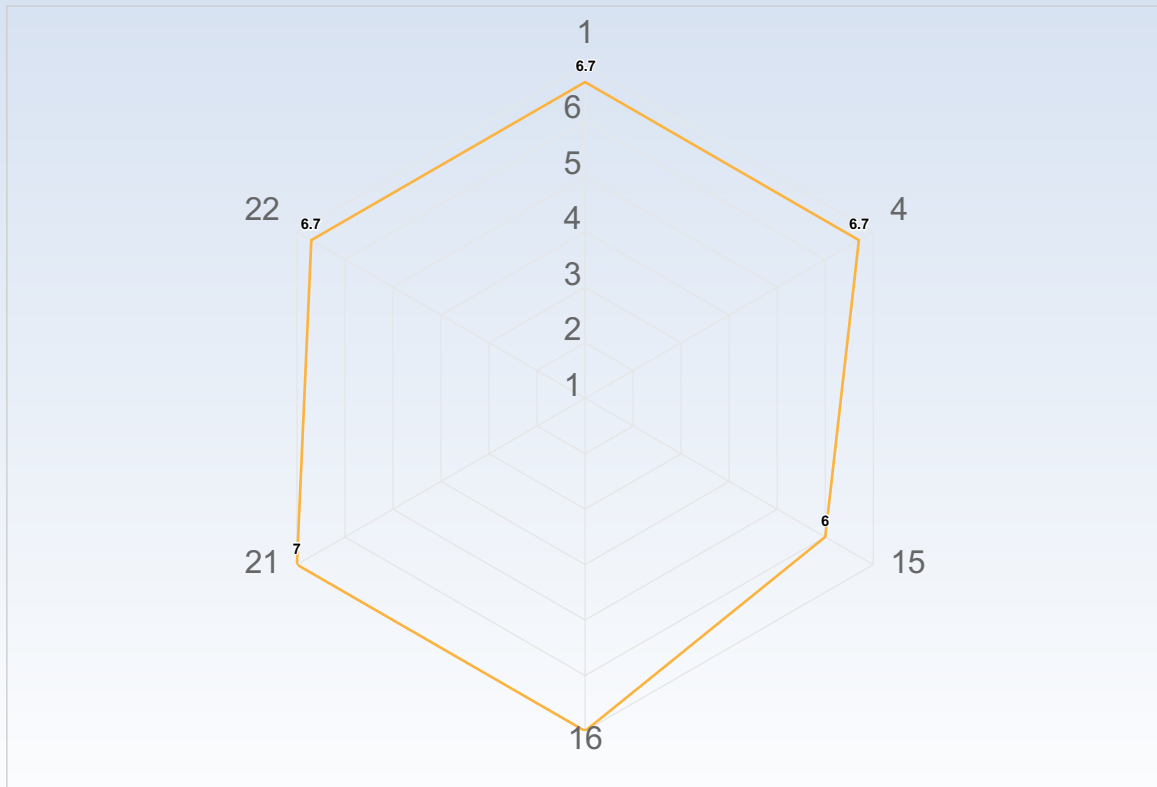
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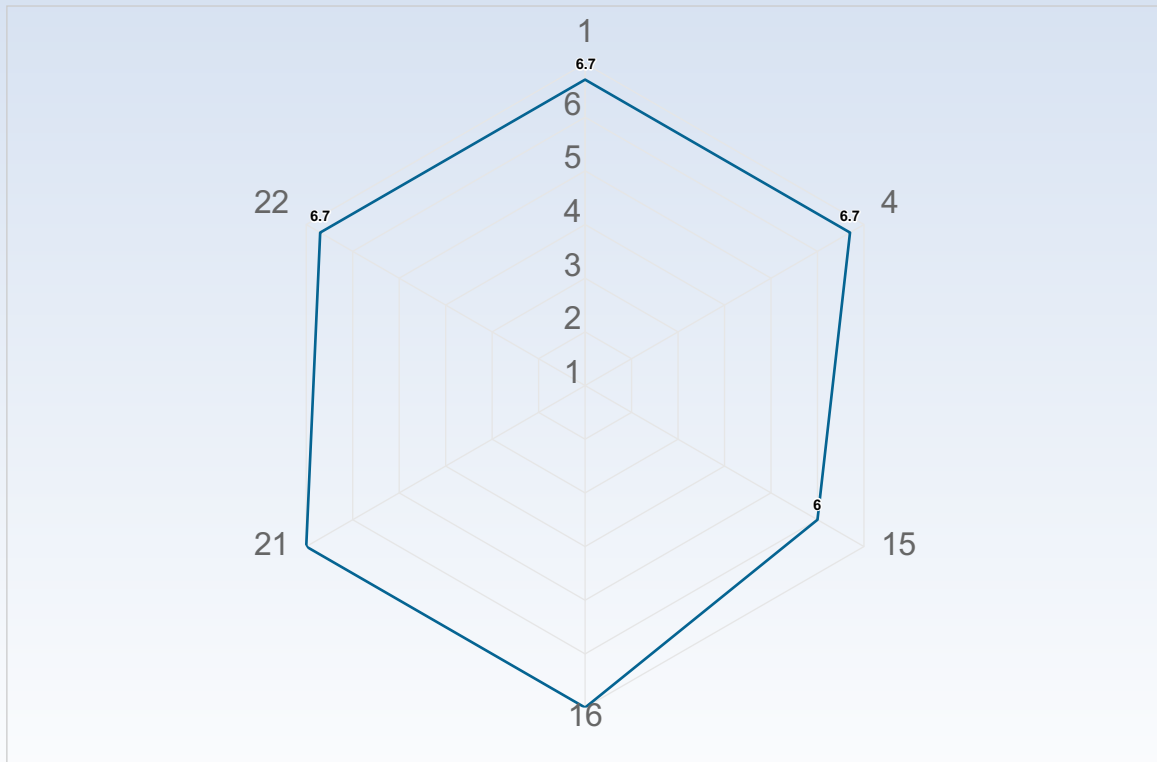
Average response to LEQ statements - per gender



— Kvinna — Man — Annat — Vill ej uppge

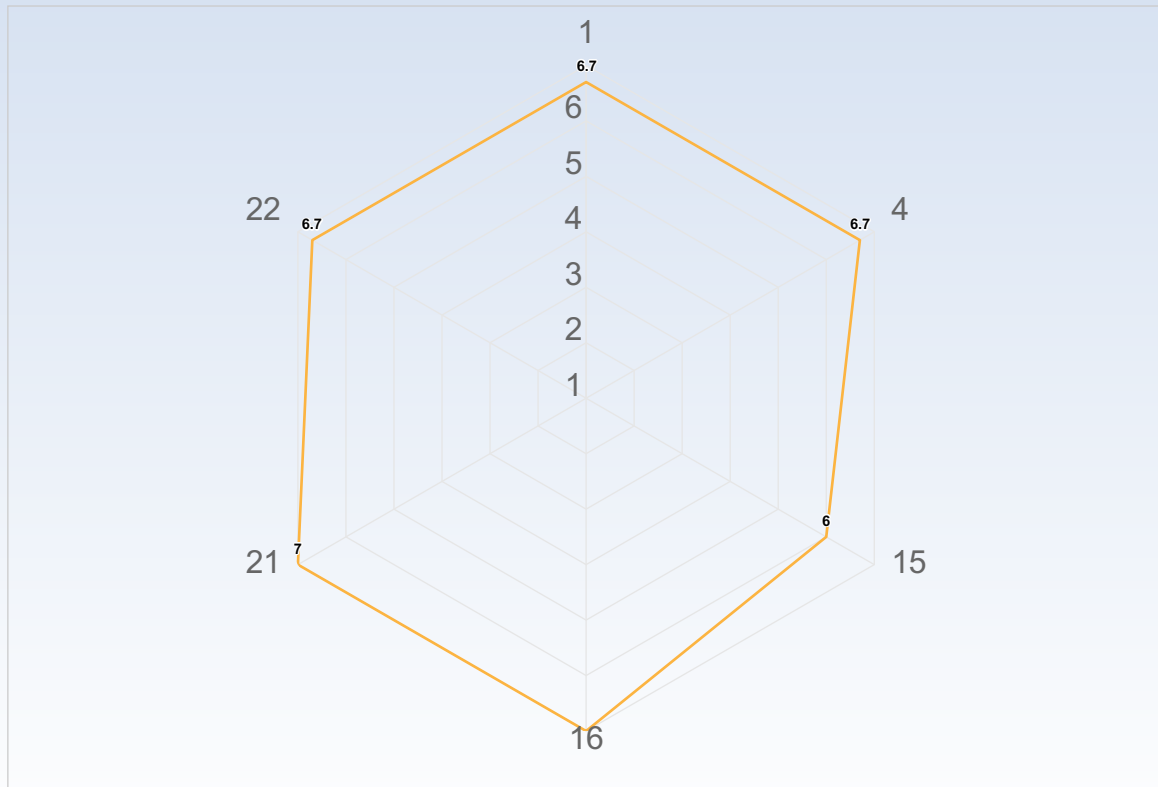


Average response to LEQ statements - per type of student



- Internationell masterstudent
- Svensk student i årskurs 4-5
- Internationell utbytesstudent
- Annan typ av student
- Svensk student i årskurs 1-3
- Vill ej uppge

Average response to LEQ statements - per disability



— Ja — Nej — Vill ej uppge

## GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 9-11 timmar/vecka)

The lectures were really good!

How engaging Sören and Artem was clearly showing their great interest in the subject. It was also really fun to do the physical labs in Kista.

What was the best aspect of the course? (I worked: 18-20 timmar/vecka)

Interesting topics, good lectures and a good sense of how the topics are used in practice out in the industry.

What would you suggest to improve?

What would you suggest to improve? (I worked: 9-11 timmar/vecka)

I think the schedule for the homeworks and labs could be shifted some weeks earlier in the course. The last few weeks were quite hectic also since most people taking this course will probably also do the ROD-course which is also heavy late in the second period.

The home assignments were quite overwhelming

What would you suggest to improve? (I worked: 18-20 timmar/vecka)

The important stages and endpoints of the computer lab could possibly be stated a bit more explicitly to avoid some of the detours.

What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)

As always start with the homeworks in good time, don't be afraid to ask for help since much of the contents in this course is hard to find and figure out by yourself.

What advice would you like to give to future participants? (I worked: 18-20 timmar/vecka)

Lectures gives a lot of relevant information to the homework exercises.

## SPECIFIC QUESTIONS

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## RESPONSE DATA

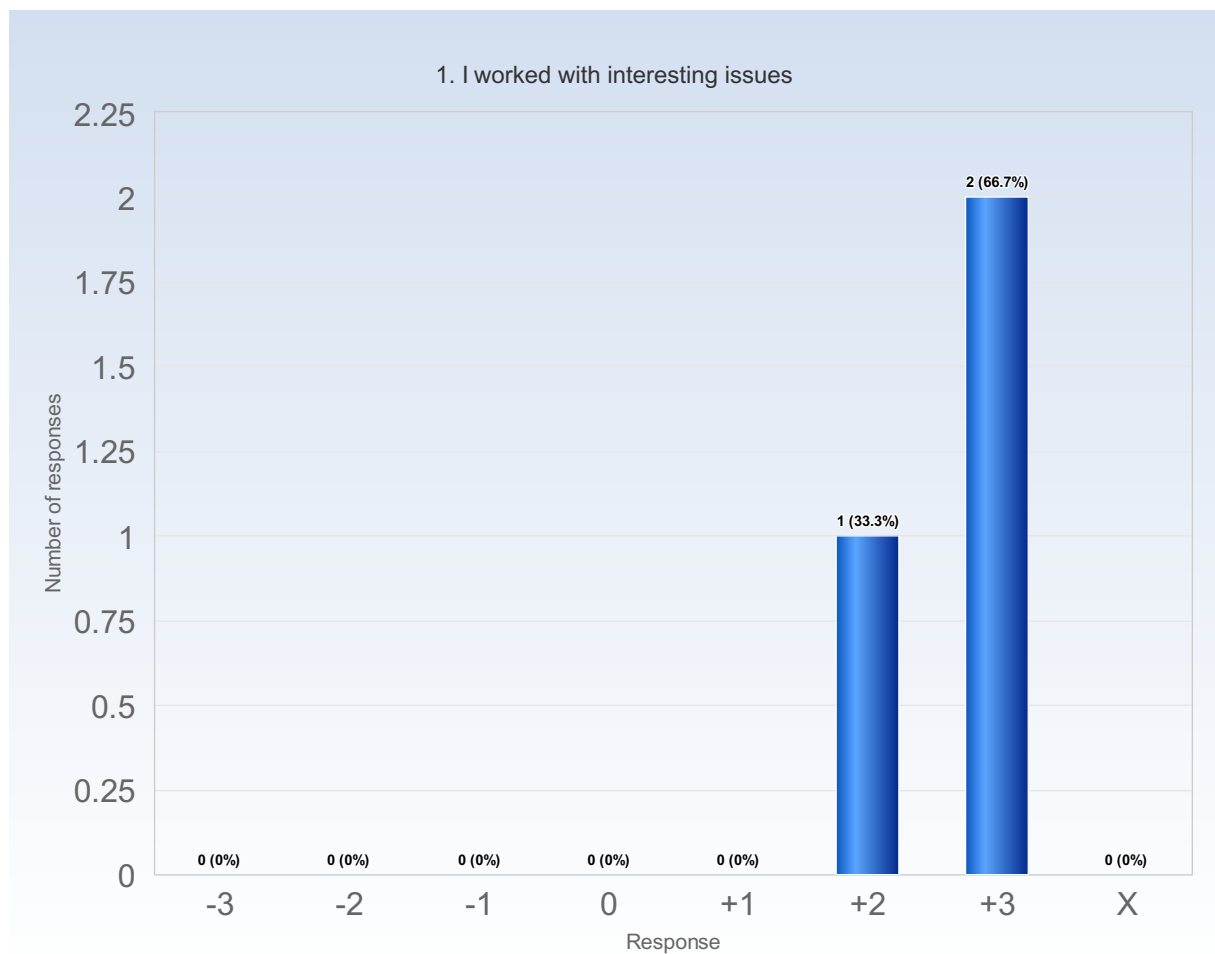
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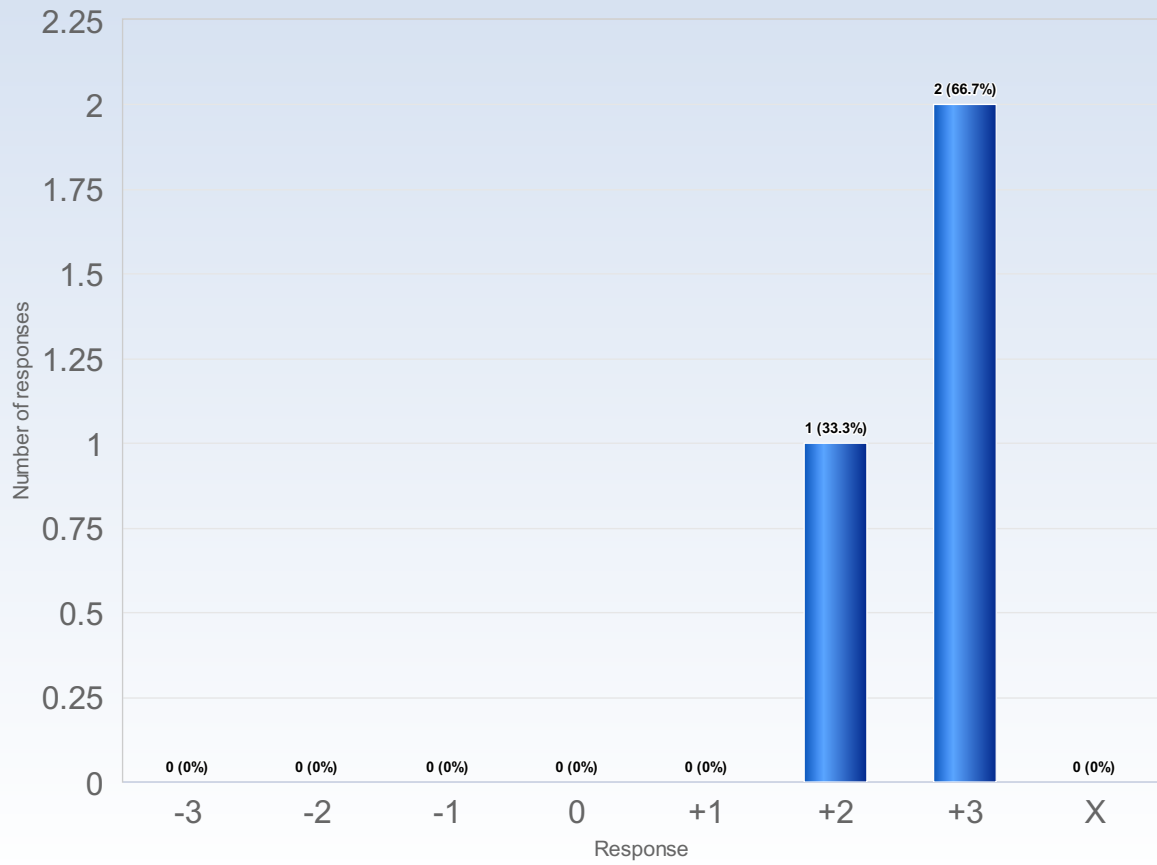
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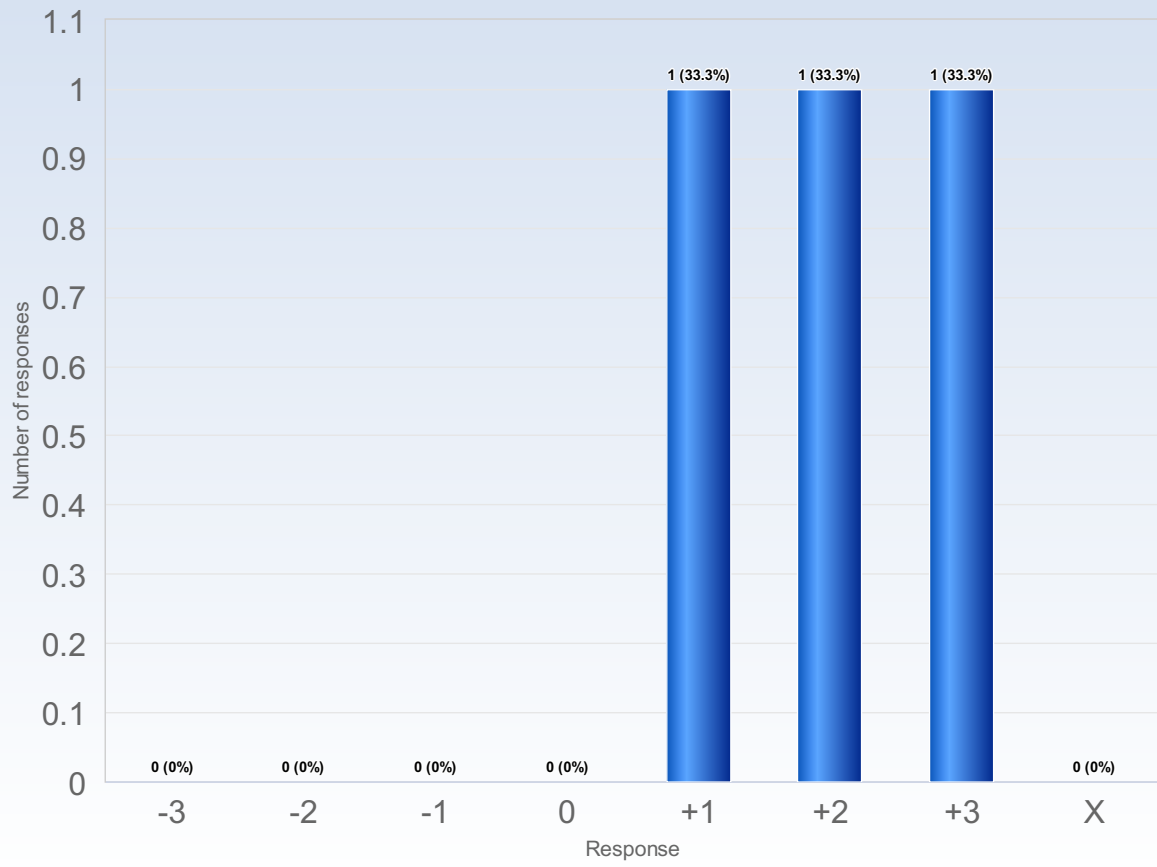
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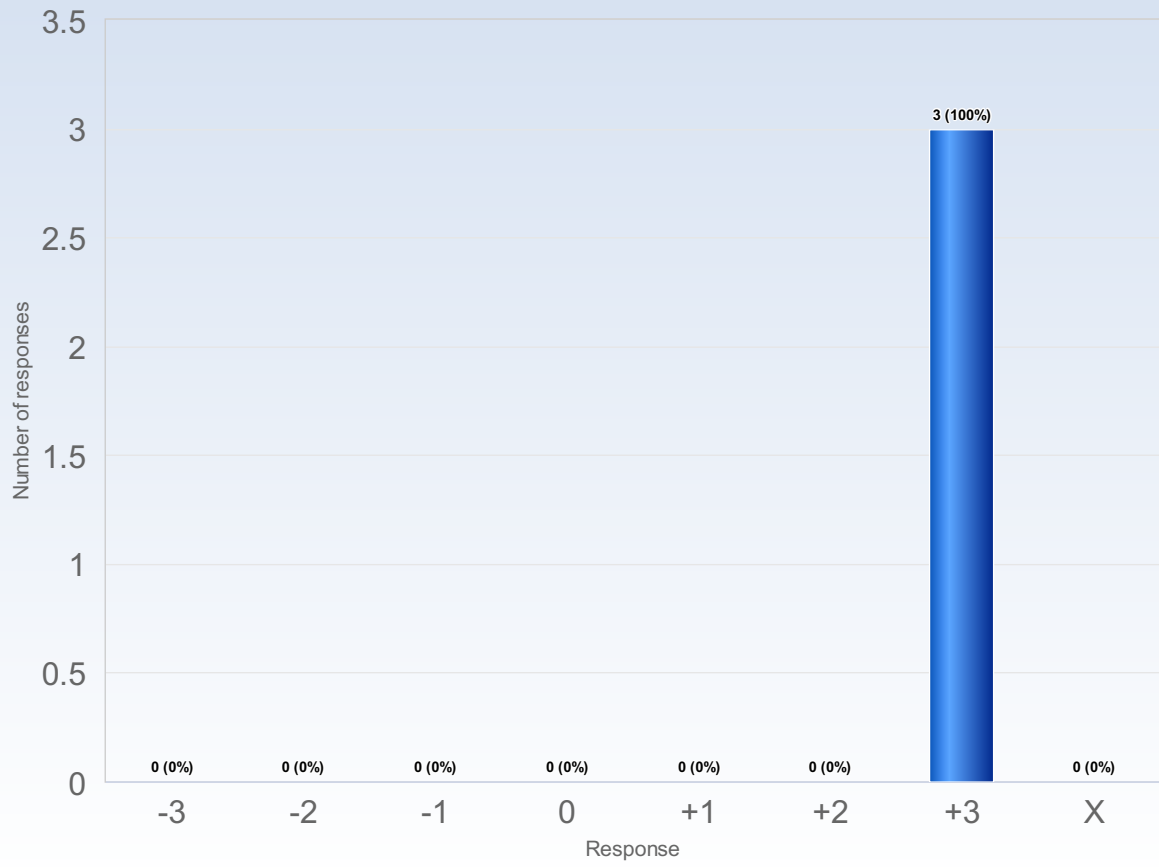
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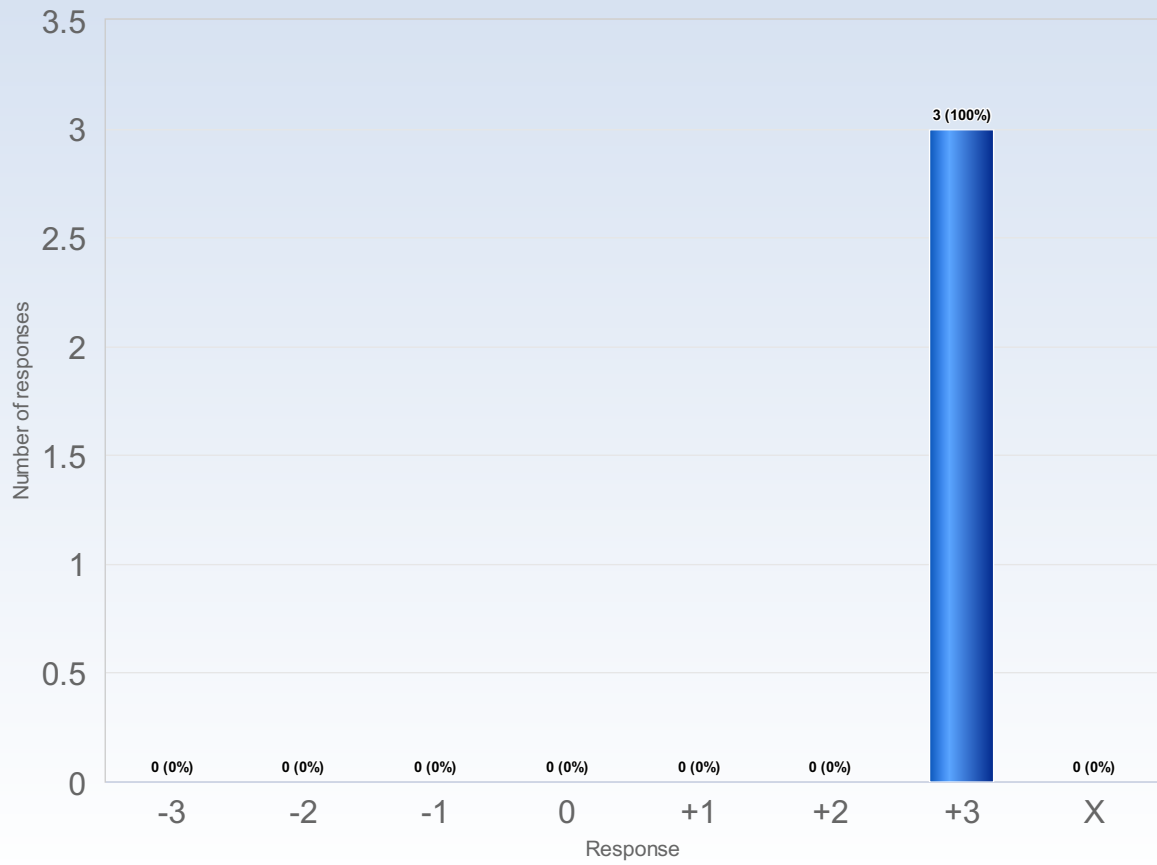
15. I was able to practice and receive feedback without being graded



16. The assessment on the course was fair and honest



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



Comments

Comments (My response was: +3)

Since it's such a specialized course it was hard to find information online so i would say that i learned the most from discussing with my coursemates and the teachers.



22. I was able to get support if I needed it

