

# Report - EQ1220 - 2022-08-23

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.

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**Course analysis carried out by (name, e-mail):**

Tobias Oechering, oech@kth.se

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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.**

Course feedback was requested at the end of the course using a standard survey with a few questions added. Students were encouraged to respond by providing a link with some hints on the upcoming exam.

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**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.)**

Students have been met after the reflection lectures and when students asked for a meeting.

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**COURSE DESIGN**

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

Due to COVID a major re-design to flipped class-room lectures was done. Lectures have been revised and recorded, which was a major revision and significant amount of work. Reflection lectures with reflection questions using Mentimeter were newly developed which was another significant amount of work. Extra care for grouping of students, room booking etc was done to meet COVID requirements, which was significant extra work. All other parts which did not require revision due to COVID were kept as they were.

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**THE STUDENTS' WORKLOAD**

**Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?**

7.5 credits = 200h; the course is seven weeks plus exam preparation; students answer on this question shows a large spread while the average fits; the large spread is due to the different levels of prior background knowledge on the topic.

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**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 as usual. A large spread in the outcome. A few very good results, several students failed but most of them managed in the re-exam.

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**STUDENTS' ANSWERS TO OPEN QUESTIONS**

**What does students say in response to the open questions?**

Many positive comments that confirm that we succeeded with the major re-design and provided a good learning experience despite of COVID. Here is a selection of comments that we found interesting:

- "I think the workload in this course is quite balanced." We are glad to read this. We strive for this after it was a problem several years ago.
  - "Reflection lectures were really good in terms of discussing together and understanding the topics in different approaches. Also the projects were really helpful because they forced us to understand the concepts in order to implement them. As a result, implementing something practically and seeing that you are in the right way encouraged me till the end of the course." - Very happy to read that we succeeded to design the reflection lectures. We had some questions from clicker questions in the lectures, but the material was far not enough for complete reflection lectures. I am aware that there is room for improvement.
  - "I would advice them to study regularly because each upcoming topic is dependent on understanding the prior topics." This is what we want students to do and it is good that they express this as well.
  - "Thank you for the course. Prof. Tobias, you are a very inspiring person with much enthusiasm for what you teach. It is very pleasant to learn from a person like you. The TAs are very competent, they gave good feedback." This is nice to read since we put so much effort in the re-design of the course.
  - "There was a novel lecture organization combining virtual prerecorded lectures and on campus reflection lectures. It turned out to be excellent" - again, this is nice to read since we put so much effort in the re-design of the course.
  - "Amazing, reflection is the key to learning by heart I feel." Glad to read this, but I know that we can improve the questions.
  - "To be honest, I prefer the traditional way of teaching." I fully acknowledge that some students prefer the traditional way. Given the COVID situation, I consider(ed) this to be the best solution.
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**SUMMARY OF STUDENTS' OPINIONS**

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

The feedback was very good, constructive and matched our experience and expectations.

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**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 major revision to flipped-classroom was successful. The course has been improved by making it more flexible for the students. The recorded lectures will be valuable material for the future. The reflection questions can be improved but are a good starting point. The TAs did a very good job.

The efforts spent on the revision of the course were significant, far beyond what is done usually but it was necessary due to COVID. We are glad that students appreciated our efforts.

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## **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?
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Students replied with a low score on

- "I explored parts of the subject on my own," which is correct. There is only the project where they have some freedom. Otherwise it is a tight study program (on intention).
  - "My background knowledge was sufficient to follow the course," which is due to the variety of prior knowledge among the students the known challenge of the course. We try to provide support but it is a systematic issue being a synchronisation point at the beginning of the master studies at a new university.
  - "I had opportunities to influence the course activities," which is correct. There is little room for bonus point essays and projects but otherwise the course has a very tight study program (on intention).
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## **PRIORITIZED COURSE DEVELOPMENT**

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

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Improve the reflection lectures (questions, explanation, strategy on the discussion,...).

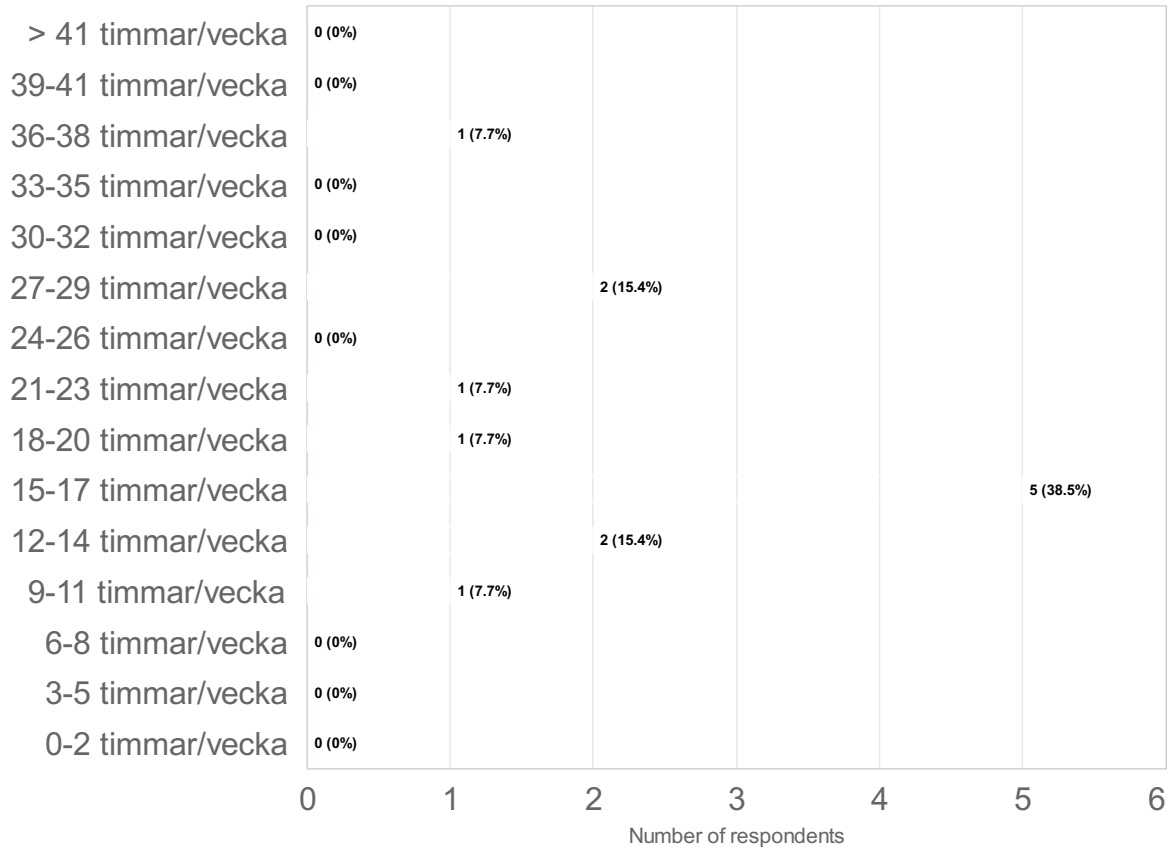
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# EQ1220 - 2020-10-06

Antal responder: 32  
Antal svar: 13  
Svarsfrekvens: 40,63 %

## ESTIMATED WORKLOAD

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



### Comments

#### Comments (I worked: 15-17 timmar/vecka)

Overall it is very good, and it is best to provide more opportunities for exercises, so that you will be more calm about the exam. In addition, the learning content is relatively close to the knowledge about random signal processing learned by the undergraduate, and the newly learned knowledge is limited.

The projects and reading assignments were the main factors that kept me working on course material and staying active throughout the period.

I think the workload in this course is quite balanced. Weekly assignments force you to put in some time every week, which helps you to keep up with the course, but without an excessive demand of time.

The workload was ok.

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

I think I need 4 hours per day to study this course. 2 hours for attending class, and 2 hours for practicing and reviewing the content after class.

#### Comments (I worked: 36-38 timmar/vecka)

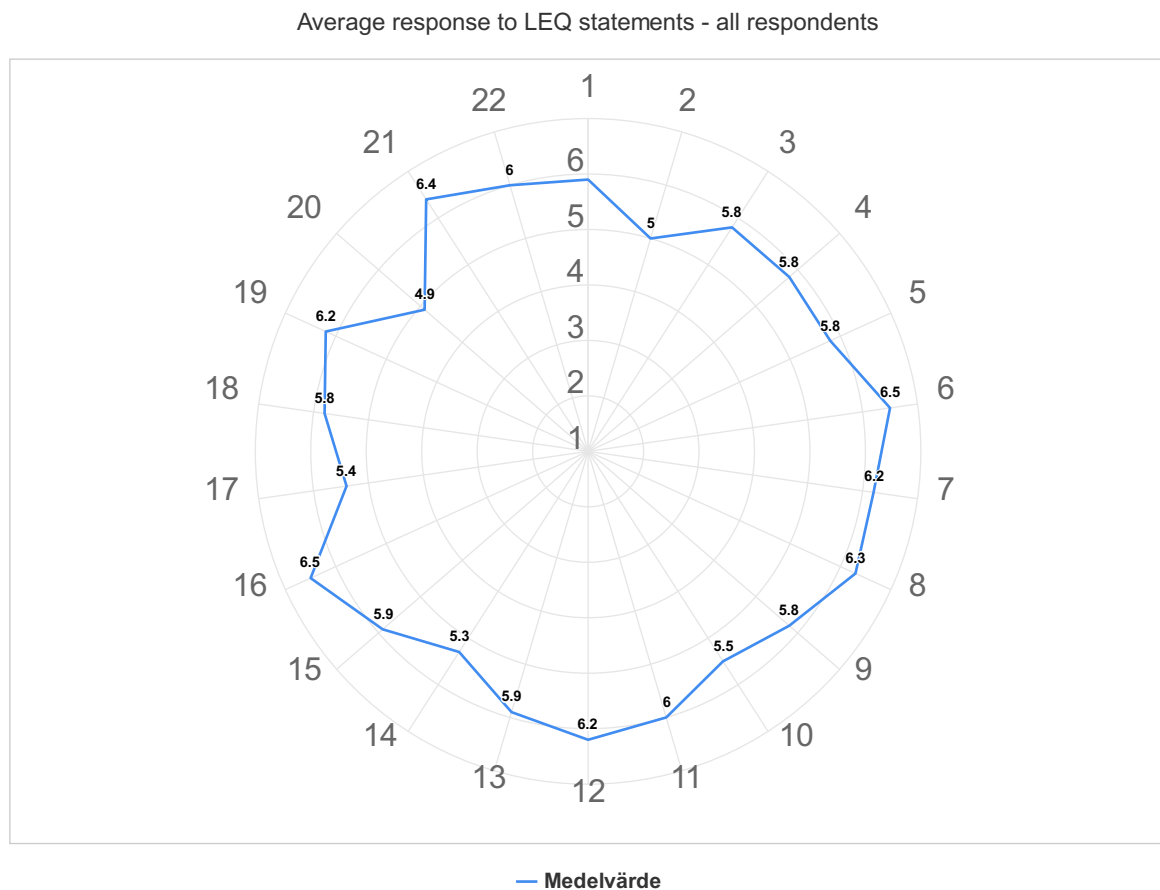
I think it was enough time to understand the concepts given the assignments and the project.

# 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.

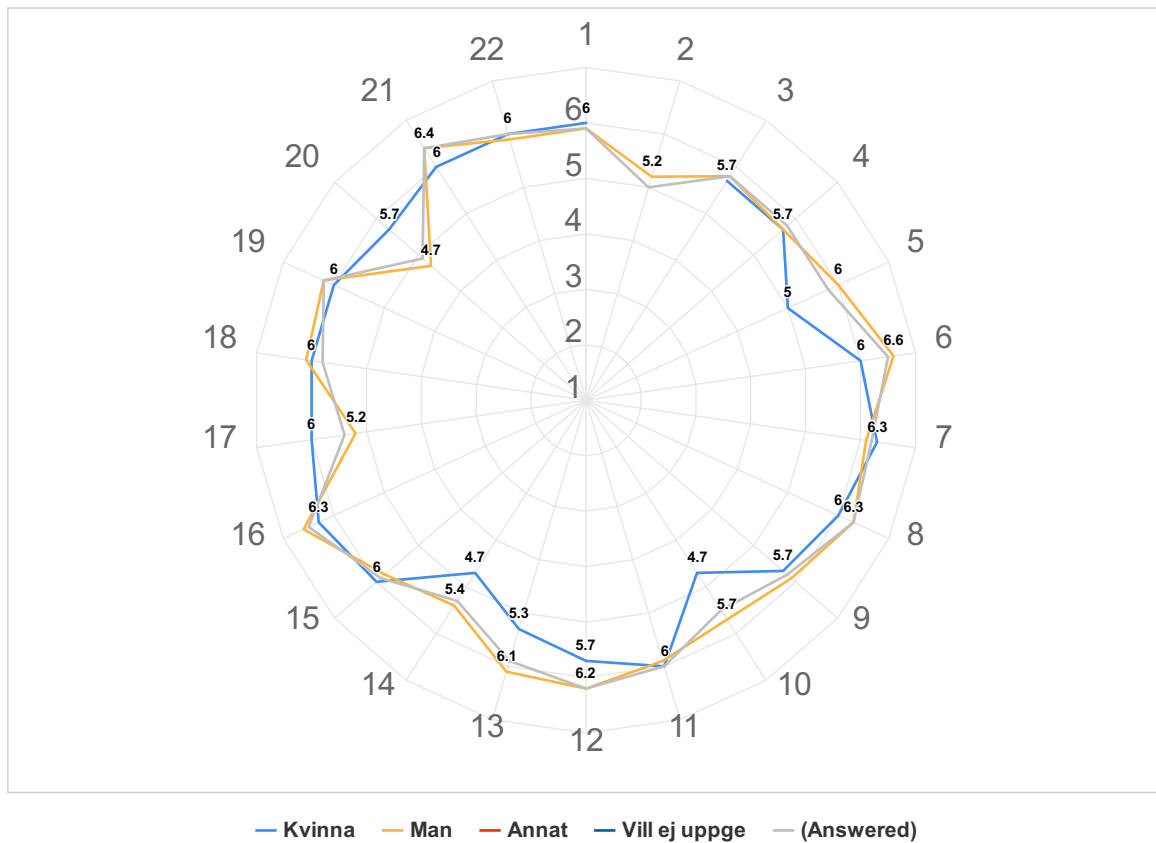
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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.

Average response to LEQ statements - per gender



#### Comments

##### Comments (I am: Kvinna)

No problem with equality on the course.

Not a lot of girls present in class, but it is not a major problem for me

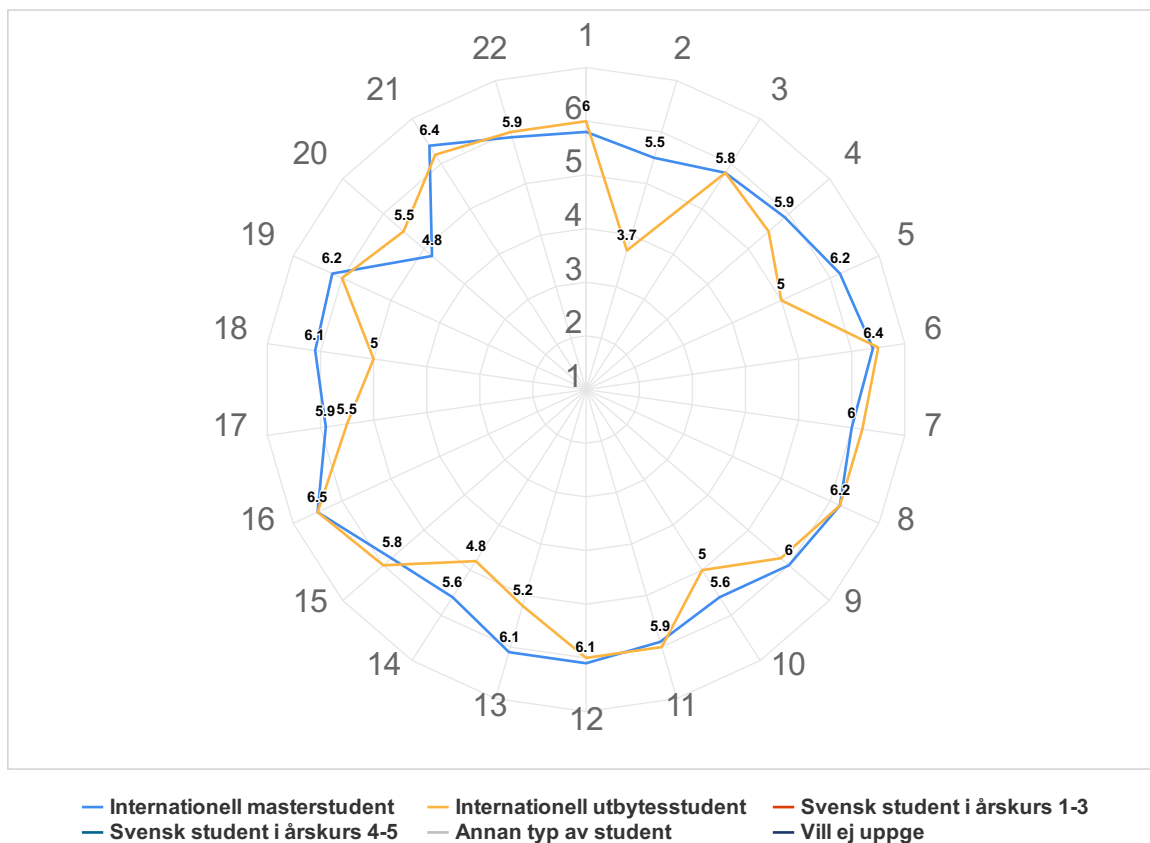
##### Comments (I am: Man)

There are more boys in this course, and discussions with students of the same gender will be more relaxed.

As a male student everything was okay about the course.

There was a quite even number of both genders in the course, which is actually a nice surprise for electrical engineering.

Average response to LEQ statements - per type of student



#### Comments

Comments (I am: Internationell masterstudent)

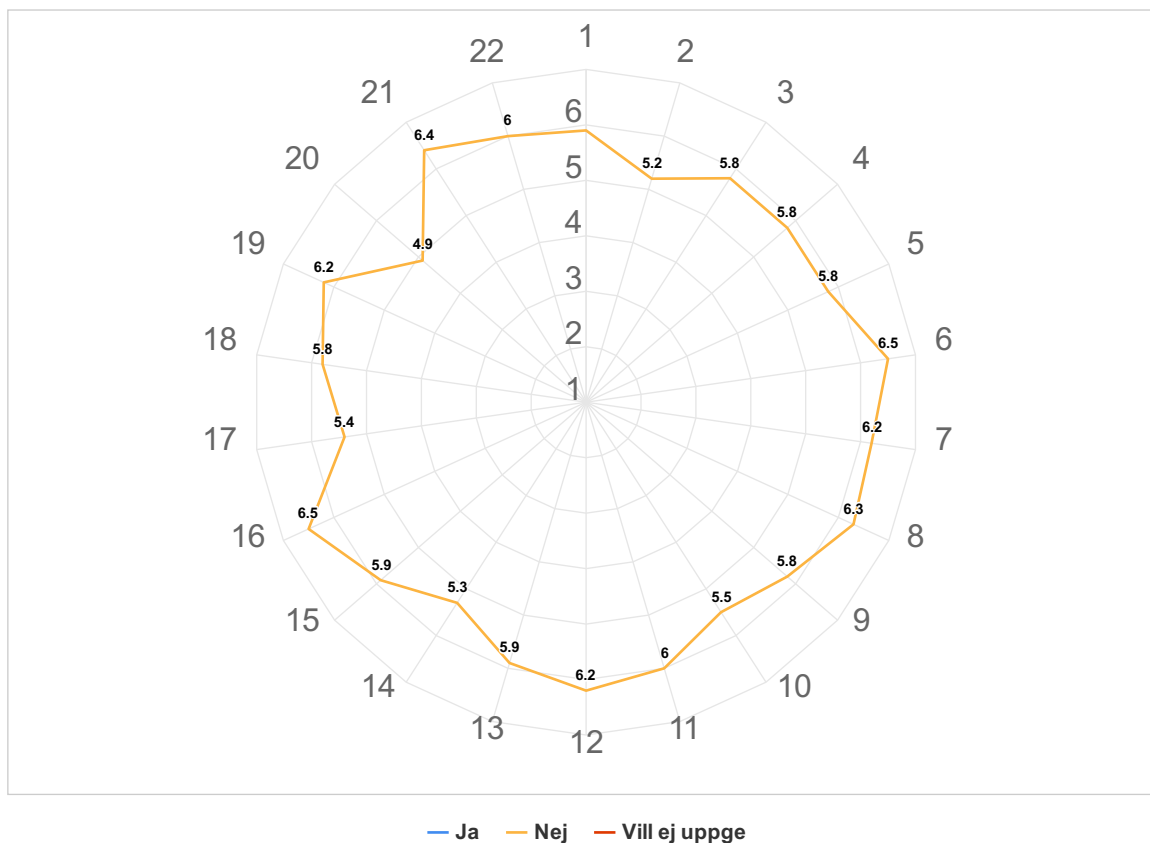
As an international master student, the class environment was suitable and adaptable for me.

No problem.

Comments (I am: Internationell utbytesstudent)

Half of the class was from my university, so it didn't change much

Average response to LEQ statements - per disability



#### Comments

Comments (My response was: Nej)

No problem.

# GENERAL QUESTIONS

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What was the best aspect of the course?

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

Exercises were well organised with a time to do the exercise and interact with other people and after a time to discover the solution with the assistant.

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What was the best aspect of the course? (I worked: 12-14 timmar/vecka)

The projects made it easier to understand the different concepts of the lecture

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What was the best aspect of the course? (I worked: 15-17 timmar/vecka)

project work.

Reflection lectures were really good in terms of discussing together and understanding the topics in different approaches. Also the projects were really helpful because they forced us to understand the concepts in order to implement them. As a result, implementing something practically and seeing that you are in the right way encouraged me till the end of the course.

I really appreciated the way the lectures were organized, having a dual system between virtual and on campus lectures. Virtual lectures give you the opportunity to go through the concepts at your own pace, stopping to reflect if necessary or watching an explanation twice. I found it very useful when facing new and non-trivial concepts. After the virtual lecture, you are prepared for a reflection lecture on campus and go deeper into some aspects. You can follow the discussion on reflection lectures because you have previously understood most of the concepts in the virtual ones. If everything was mixed together, as it usually is, you may lose some insights from the "reflection" parts because you didn't have yet a chance to digest the new concepts.

This organization is probably a reaction to the Covid situation, but in my opinion turned out to be very useful and I actually liked it better than the classical course lecture's organization.

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

The projects were good. I would not learn optimal filtering by heart if it wasn't for project 2 and the TAs. It also made me improve skills in MatLab, and learn basics of LaTeX.

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What was the best aspect of the course? (I worked: 21-23 timmar/vecka)

The professor is really nice

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

We can learn a lot when we do our projects. And the tutorials are very useful, for teaching us the way to solve problems.

Reflection lectures and tutorials.

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What was the best aspect of the course? (I worked: 36-38 timmar/vecka)

Course organization.

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What would you suggest to improve?

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

The lectures did not have enough concrete examples so sometimes it is hard to do the link between the exercises and the lecture.

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What would you suggest to improve? (I worked: 12-14 timmar/vecka)

The exercise sessions aren't efficient enough, the group aspect doesn't work. It might have been because of covid that it was done this way, but having the whole class in only one room with the 2 assistants would make it more engaging I think.

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What would you suggest to improve? (I worked: 15-17 timmar/vecka)

More tutorials.

Menti was a good tool during the reflection lectures. But I wish we were able to reach the questions and their answers after the class so that we can remember what was wrong with the "wrong" definitions so that we will not do the same wrong choices again. Also, I wish we were provided with some solved problems before related tutorials so that we could perform better during tutorials because since during lecture we do not encounter a problem solving, we are not able to perform well. Not because of our lack of knowledge but maybe because we had no experience how to approach to a problem. In addition, I think reading assignments were given faster than the schedule of the course and in the end I lost my focus on the course a little bit because there was no reading assignments anymore. Maybe the reading assignments can be increased by separating their contents into more pieces and having a reading assignment per week end. Also they will also be easier for student to solve because the questions will be from less amount of topics.

We didn't apply sampling, PAM and reconstruction theory in a project, and I think that could be interesting.

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

My background knowledge was not good enough I feel. This led me to fall behind with the problems in the tutorial. There is nothing you can improve in this case. However, I like the diagnosis that you had, which will help me to grasp up on the parts that I am missing to be able to solve the problems. Maybe a follow up on the diagnosis could be good, like some feedback and small suggestions based on the results.

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What would you suggest to improve? (I worked: 21-23 timmar/vecka)

It is really desperate to find exam are totally different from tutorial and homework.

The exam is harder. I think the course should give the instructor to students to solve some hard problems

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

I think the flipped class is not very useful. I prefer the traditional teaching way.

The exercises we took in tutorials can be harder compared to the exam.

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What would you suggest to improve? (I worked: 36-38 timmar/vecka)

it would be good to have the questions from the reflection sessions on canvas so that people can use them to study

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)

To work regularly and to start the project as soon as possible to not have too much work at the same time.

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)

Stay up to date with the material

What advice would you like to give to future participants? (I worked: 15-17 timmar/vecka)

Preparatory work should be done every week.

I would advice them to study regularly because each upcoming topic is dependent on understanding the prior topics.

Keep up with the course. Follow the weekly reading assignments and go through the virtual lectures thoroughly. It really pays of to be able to follow the latter stages of the course. To study this course just on the week before the exam might not be feasible.

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

Be active! Revise what u failed in diagnosis from week 1!

What advice would you like to give to future participants? (I worked: 21-23 timmar/vecka)

RUN!!!!

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

The participants should practice a lot and prepare well for this course.

Teacher upload the ORIGINAL slides of reflection lecture and mark the correct judgments. It is helpful for me to understand the concepts, especially when I don't know why some statements are correct/wrong sometimes even after the lecture..

What advice would you like to give to future participants? (I worked: 36-38 timmar/vecka)

Please study the subjects for one month or some time before starting the course.

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)

No

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

Thank you for the course. Prof. Tobias, you are a very inspiring person with much enthusiasm for what you teach. It is very pleasant to learn from a person like you. The TAs are very competent, they gave good feedback. Both harch and kind critics which is good.

Is there anything else you would like to add? (I worked: 21-23 timmar/vecka)

none

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

Some questions in previous exams are too difficult. Maybe it is hard to get good grades.:

Is there anything else you would like to add? (I worked: 36-38 timmar/vecka)

No.

## SPECIFIC QUESTIONS

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## RESPONSE DATA

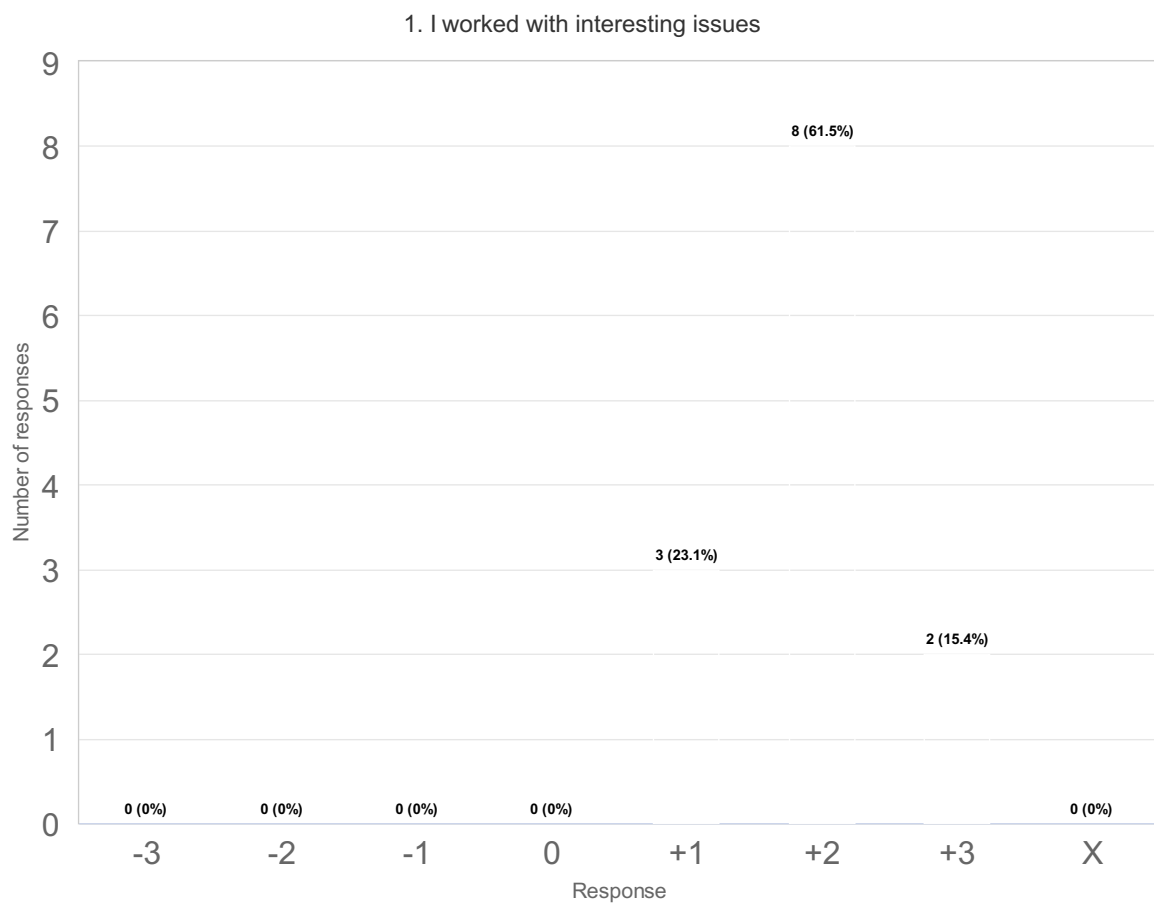
The diagrams below show the detailed response to the LEQ statements.  
The response scale is defined by:

-3 = No, I strongly disagree with the statement

0 = I am neutral to the statement

+3 = Yes, I strongly agree with the statement

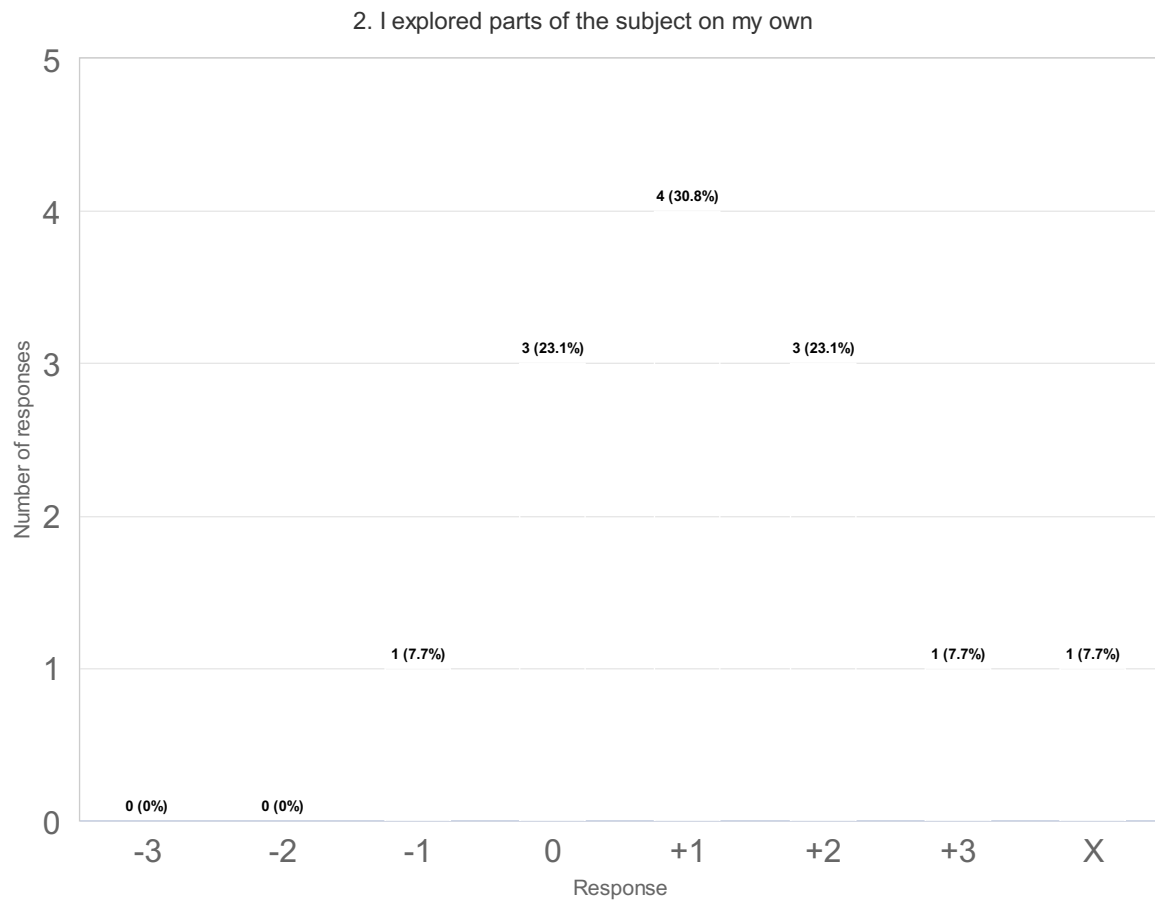
X = I decline to take a position on the statement



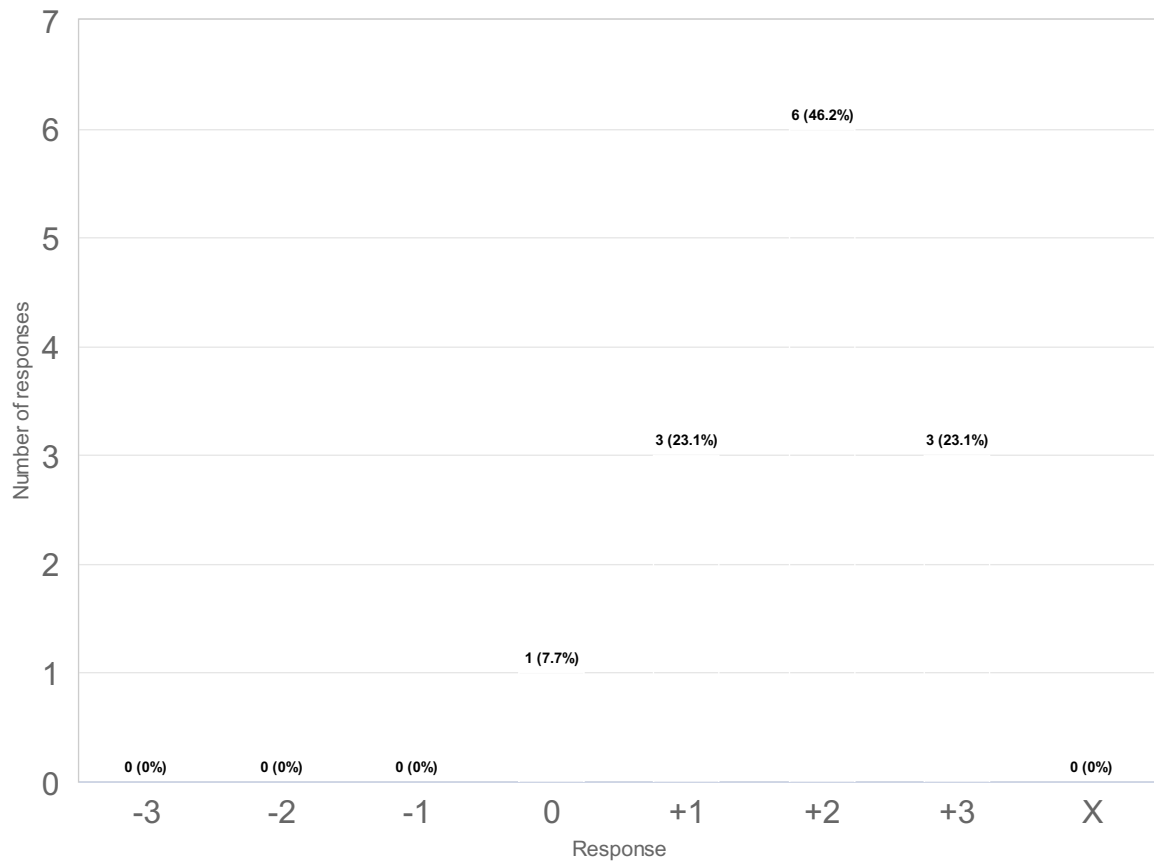
## Comments

Comments (My response was: +1)

I think more practical examples could have been used in the exercises and lectures to make it more engaging



### 3. I was able to learn by trying out my own ideas



#### Comments

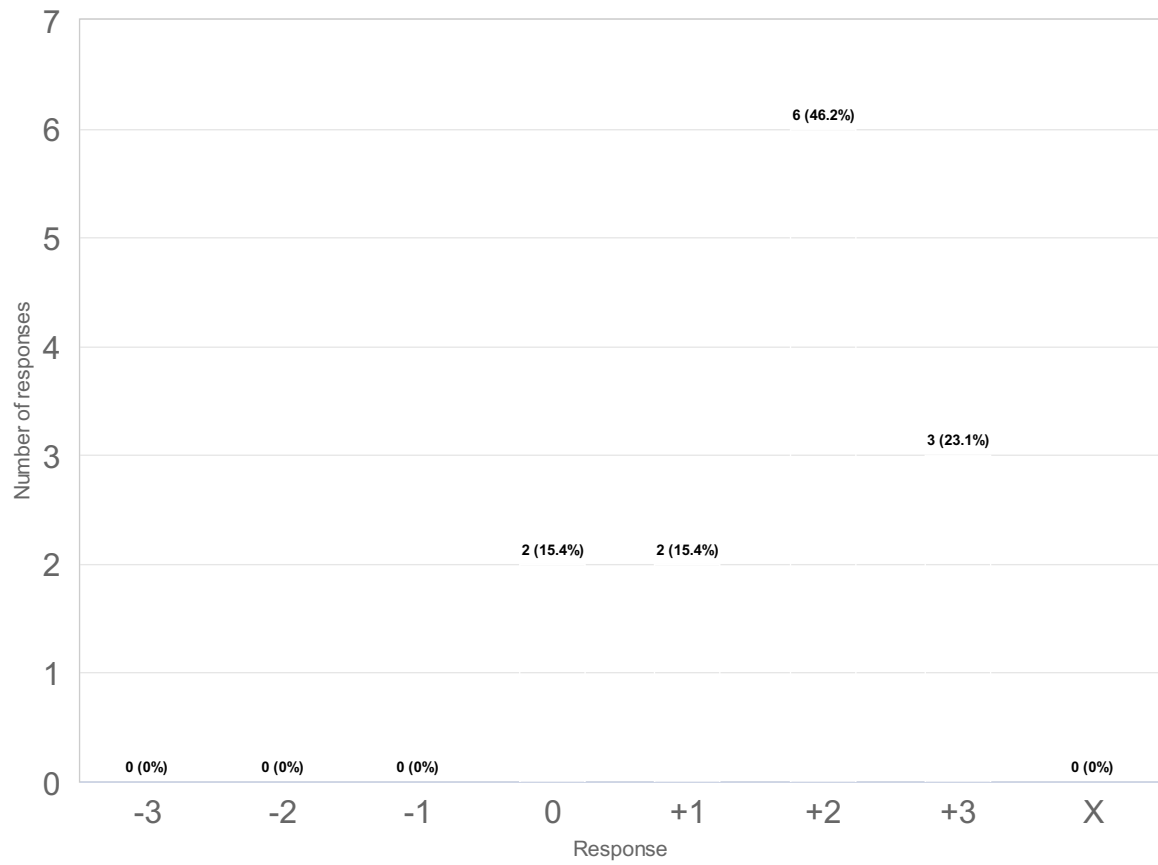
Comments (My response was: +1)

Since the content of the course were dense enough, I was not able to reach to the level of trying my own ideas in addition to understanding all concepts completely.

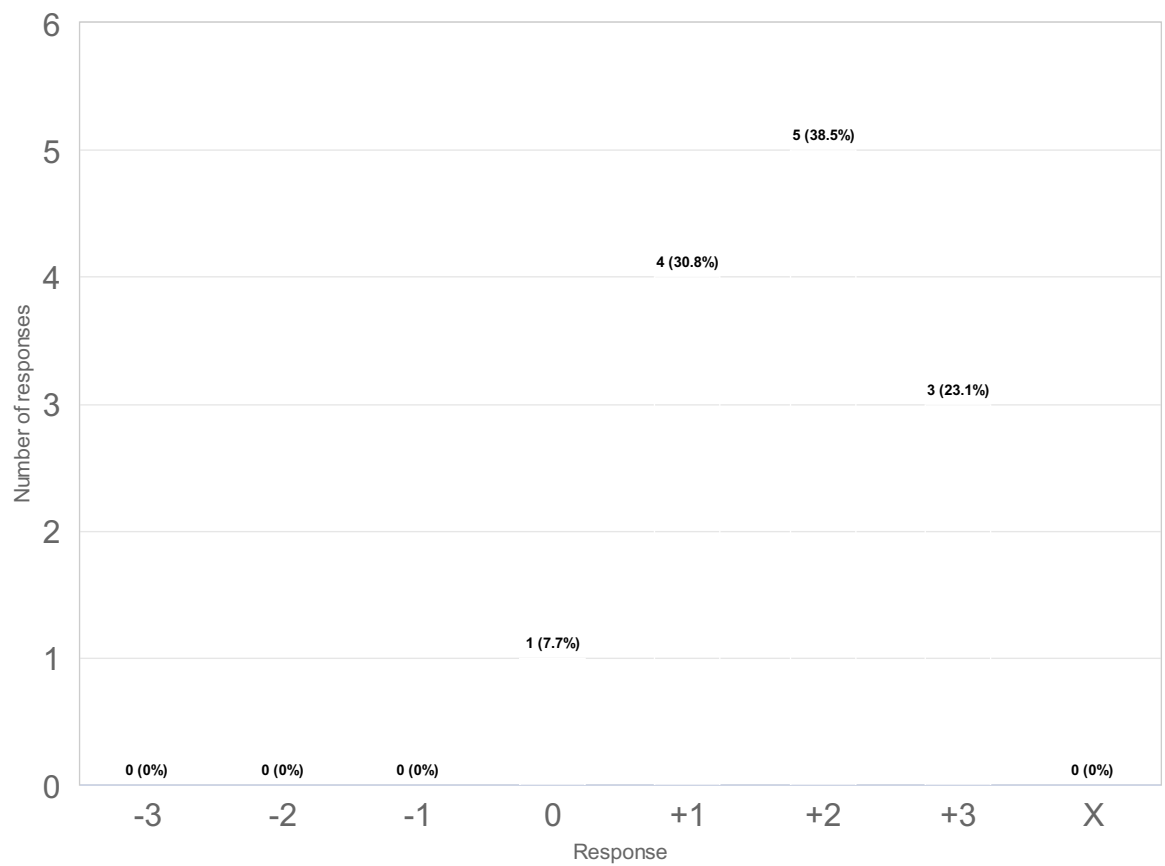
Comments (My response was: +3)

I loved the projects!

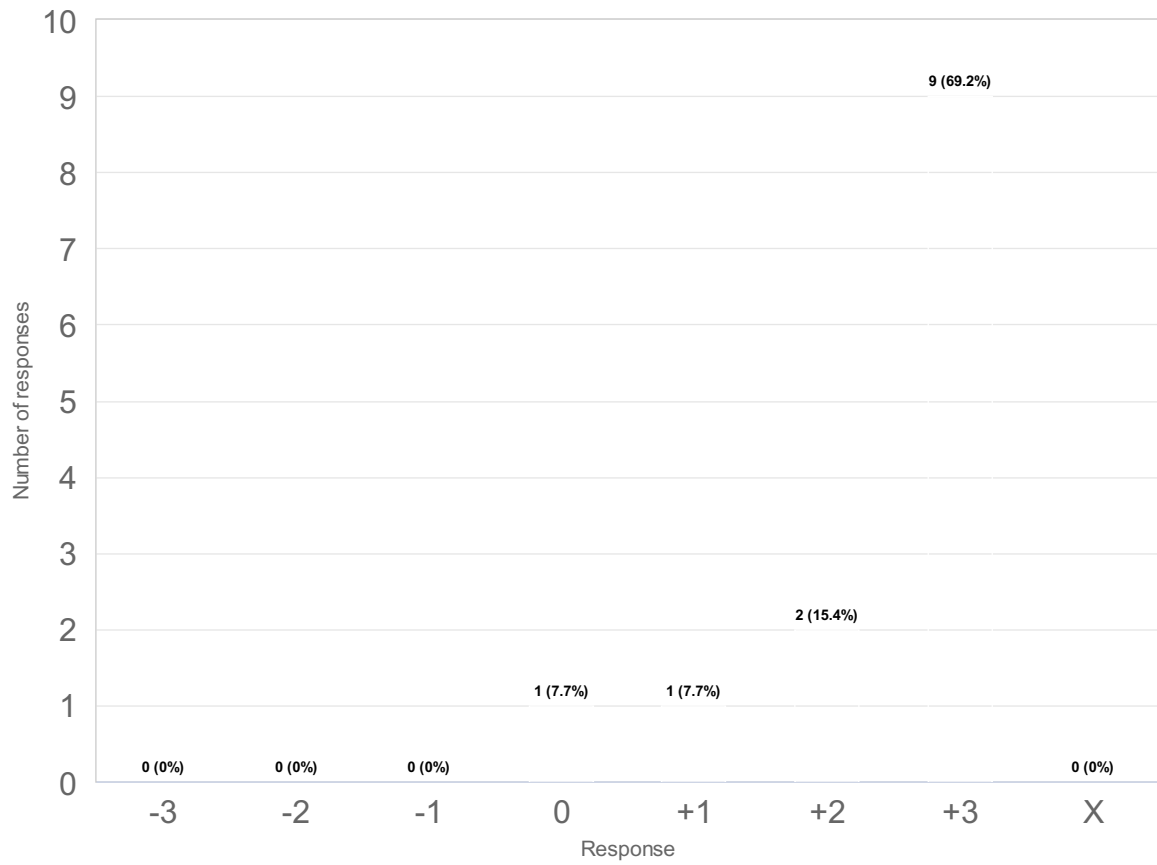
#### 4. The course was challenging in a stimulating way



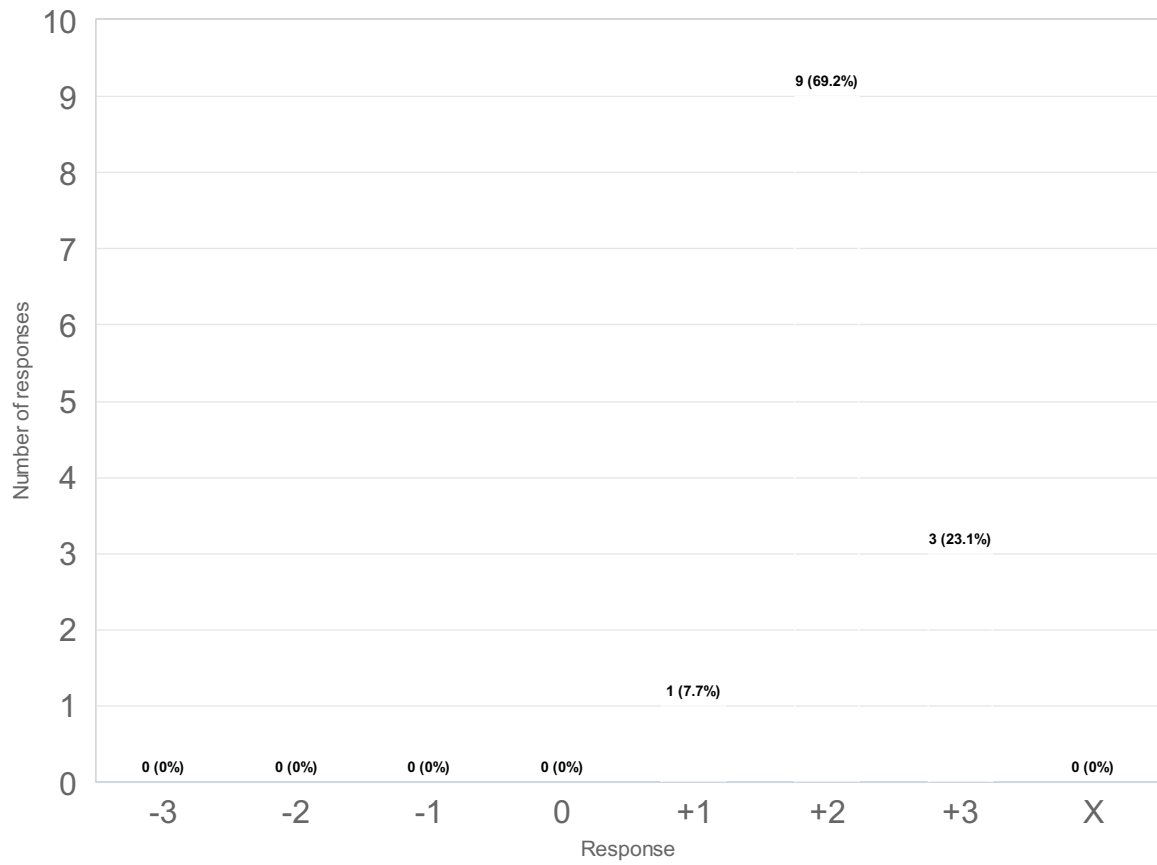
5. I felt togetherness with others on the course



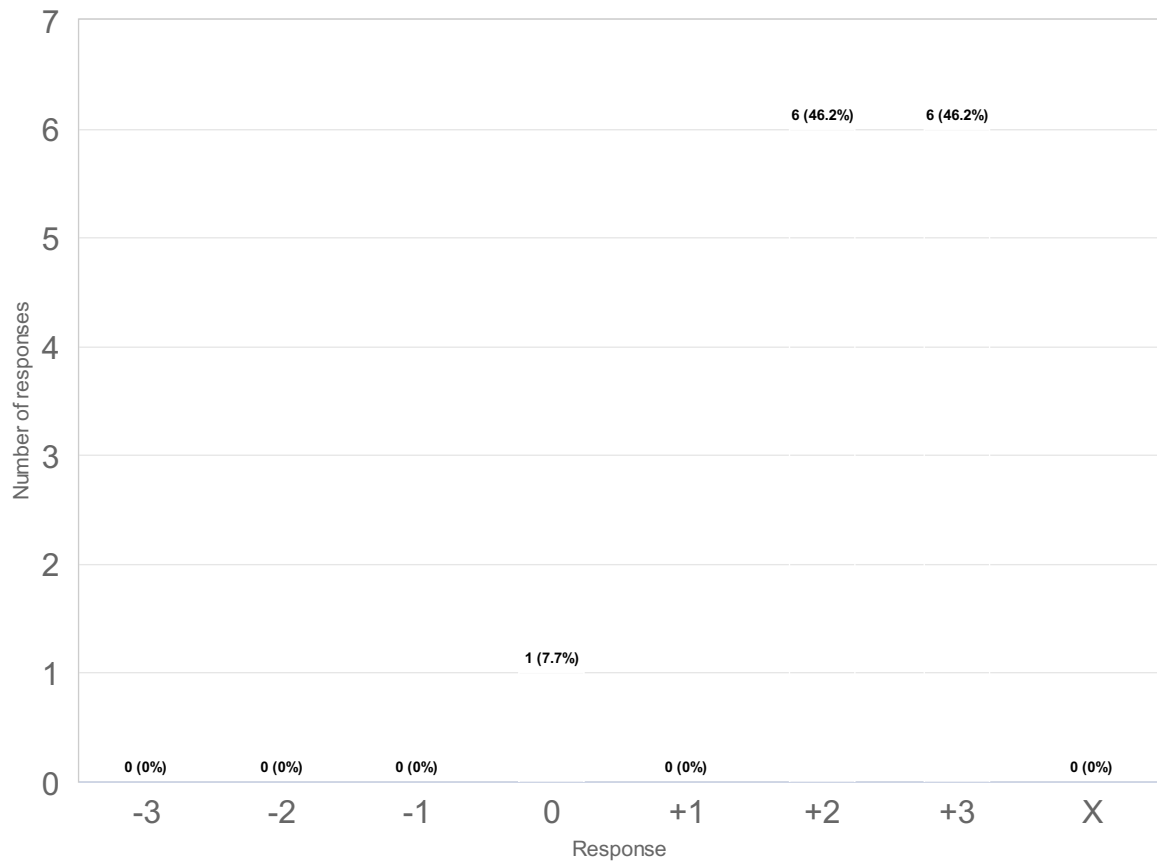
6. The atmosphere on the course was open and inclusive



7. The intended learning outcomes helped me to understand what I was expected to achieve

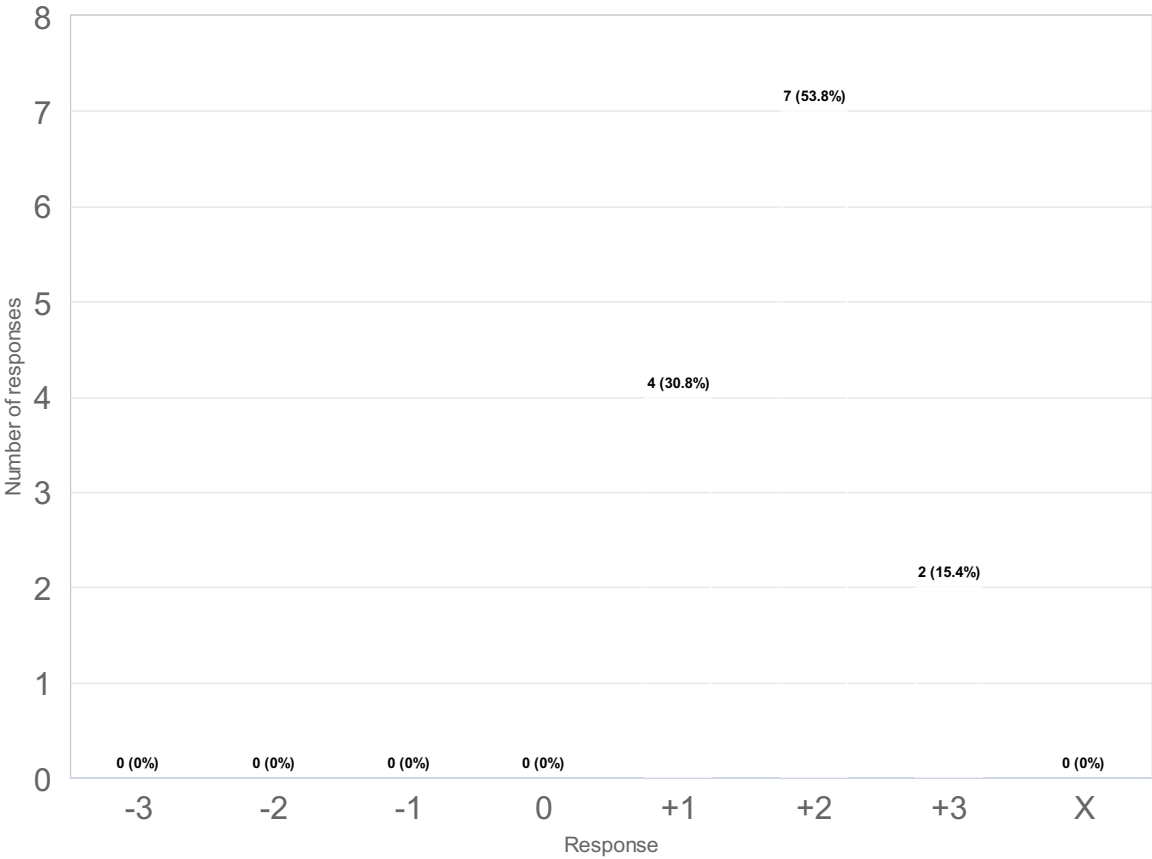


8. The course was organized in a way that supported my learning

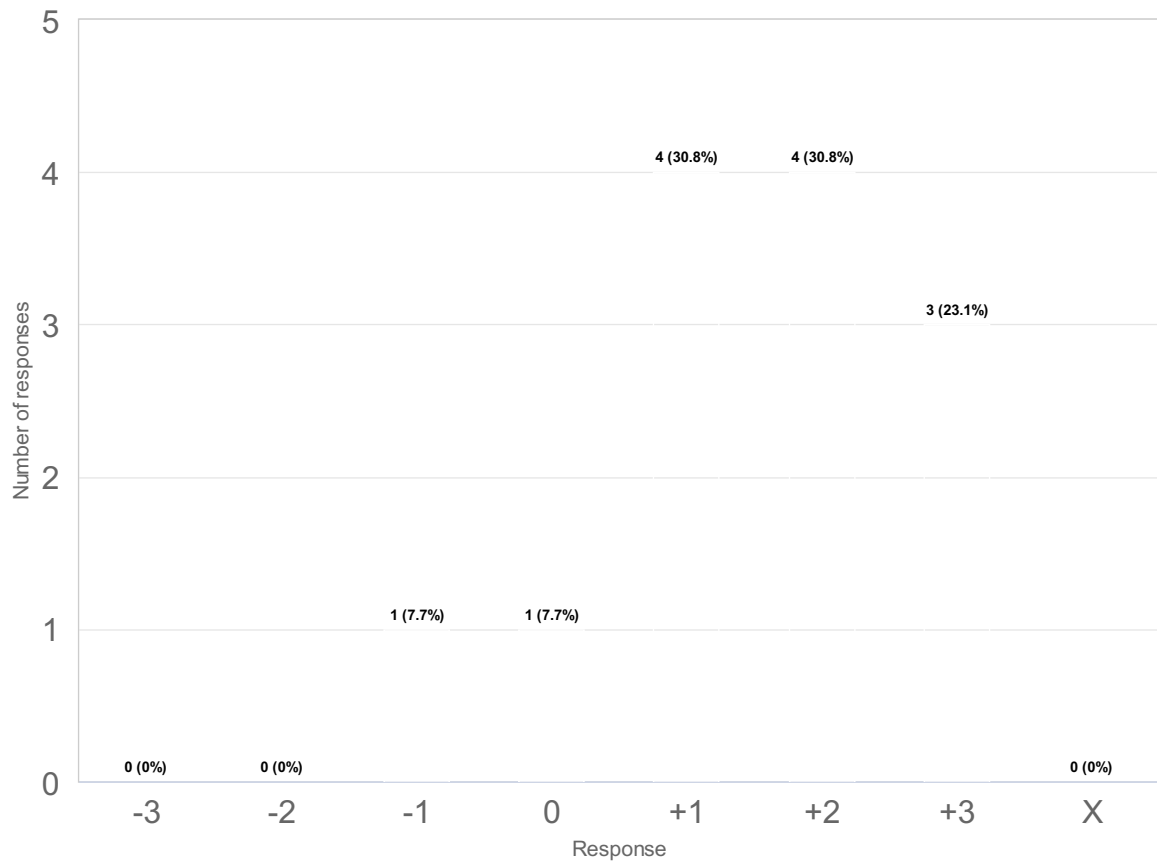




9. I understood what the teachers were talking about



10. I was able to learn from concrete examples that I could relate to

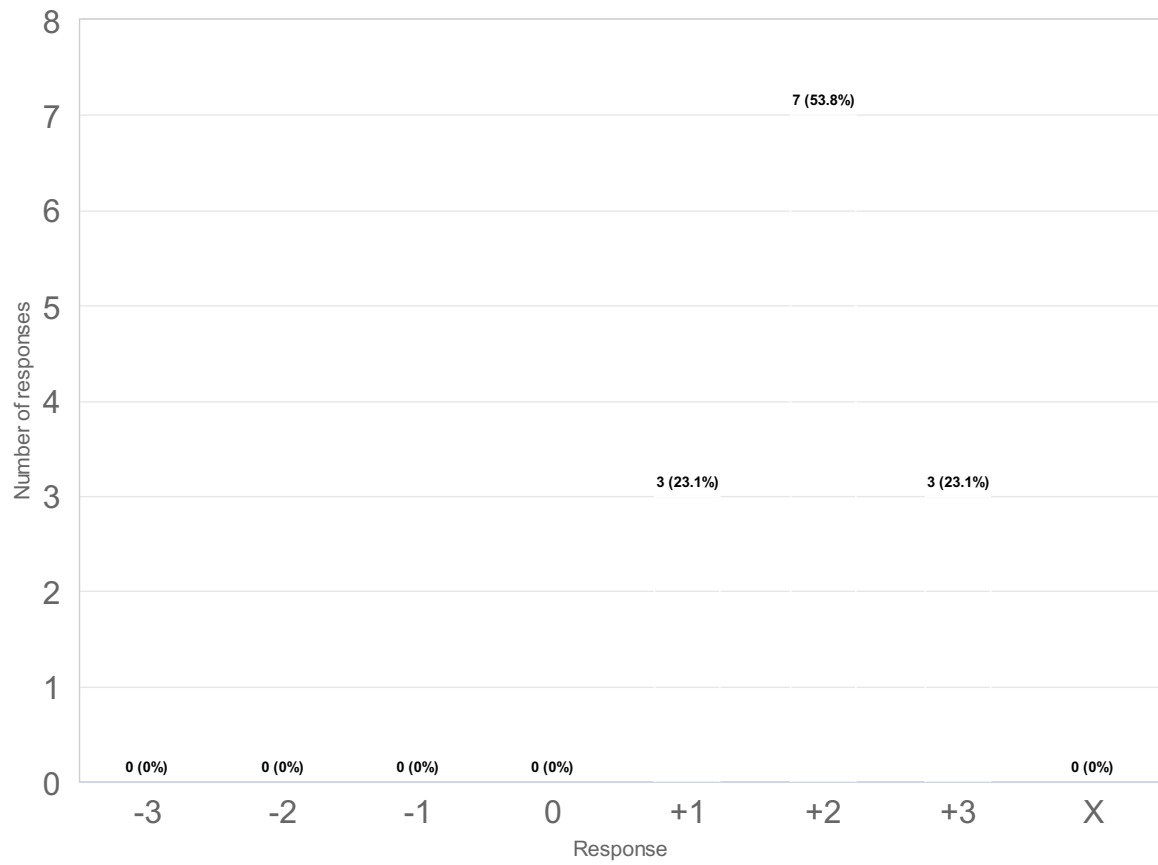


#### Comments

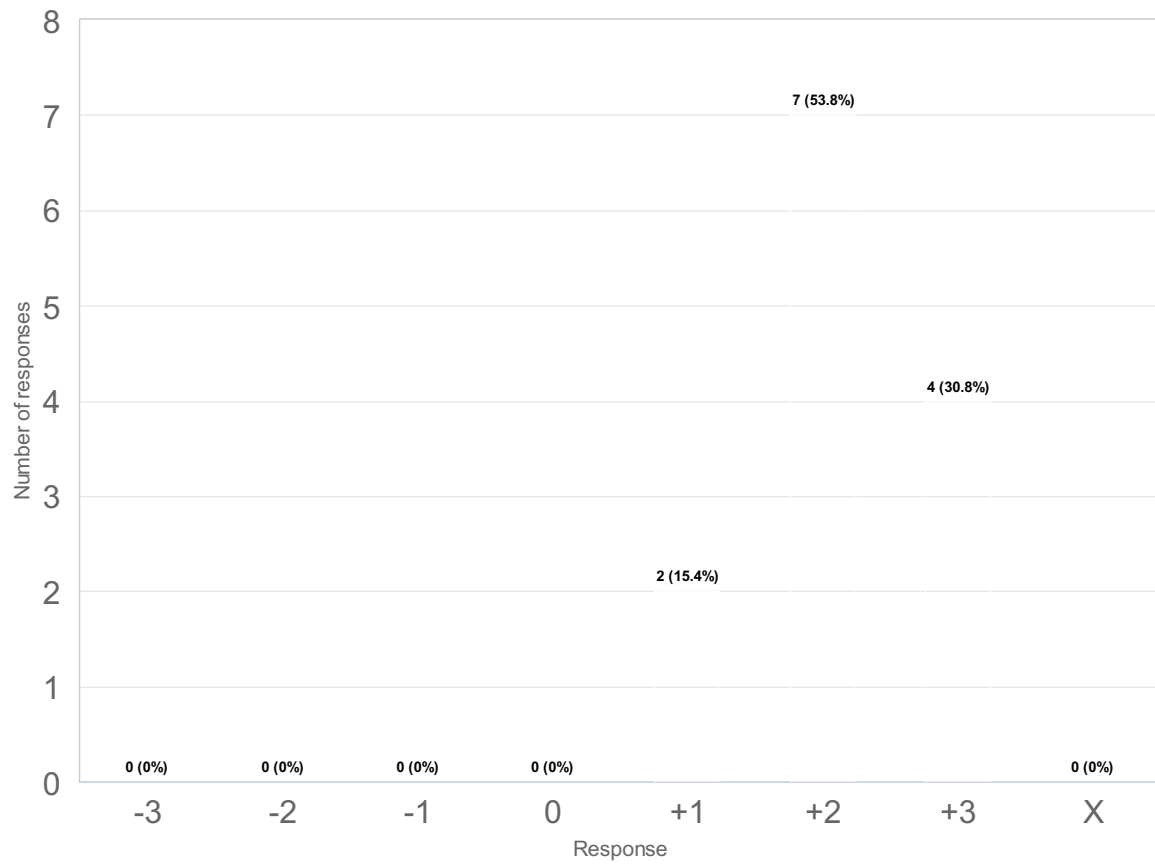
Comments (My response was: +1)

I wish we had some solved problems before we attend to tutorials so that we could have a much more performance during tutorials by getting used to these previously given problems.

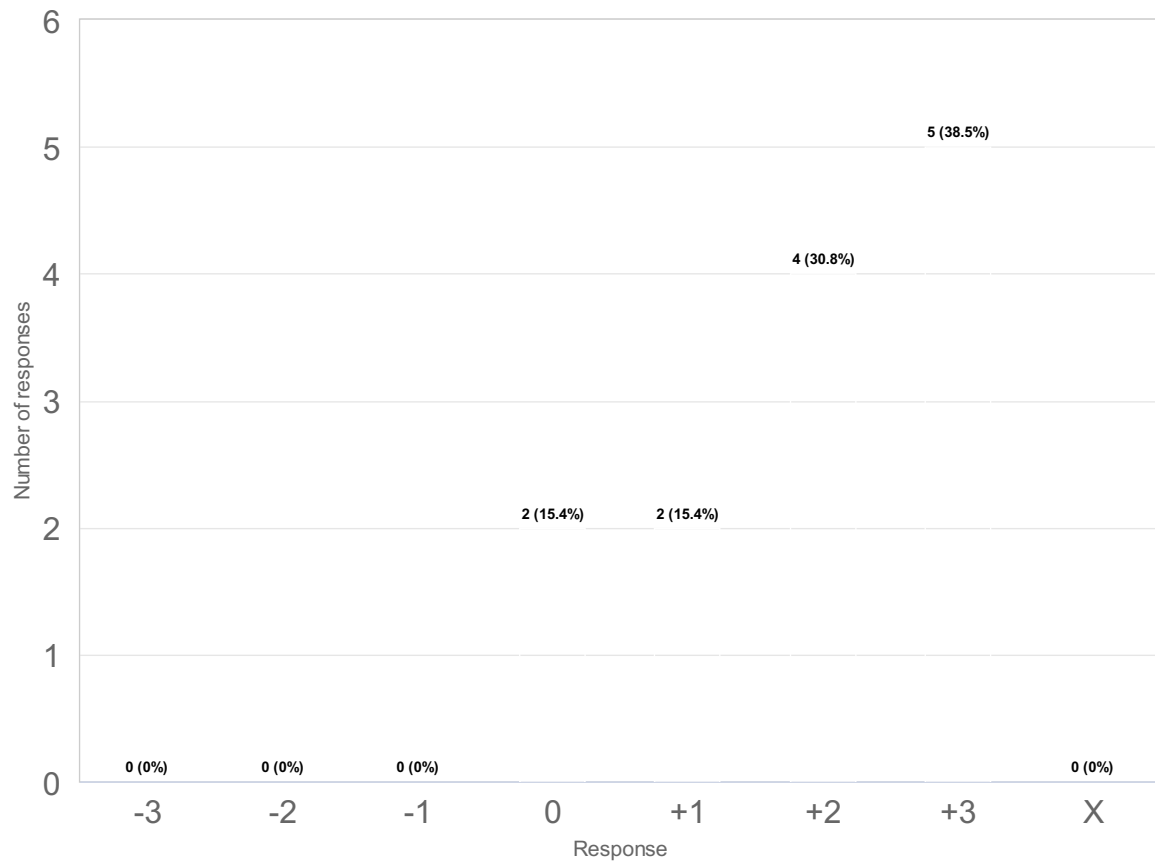
11. Understanding of key concepts had high priority



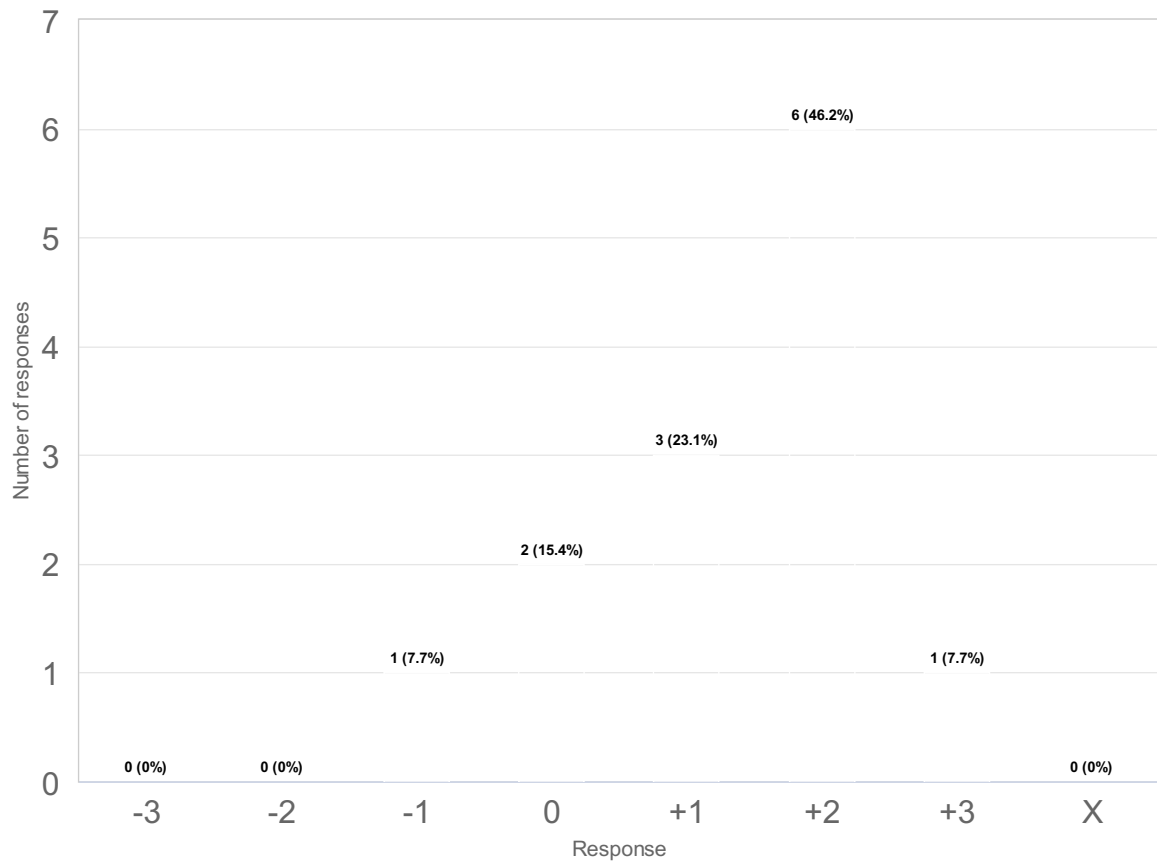
12. The course activities helped me to achieve the intended learning outcomes efficiently



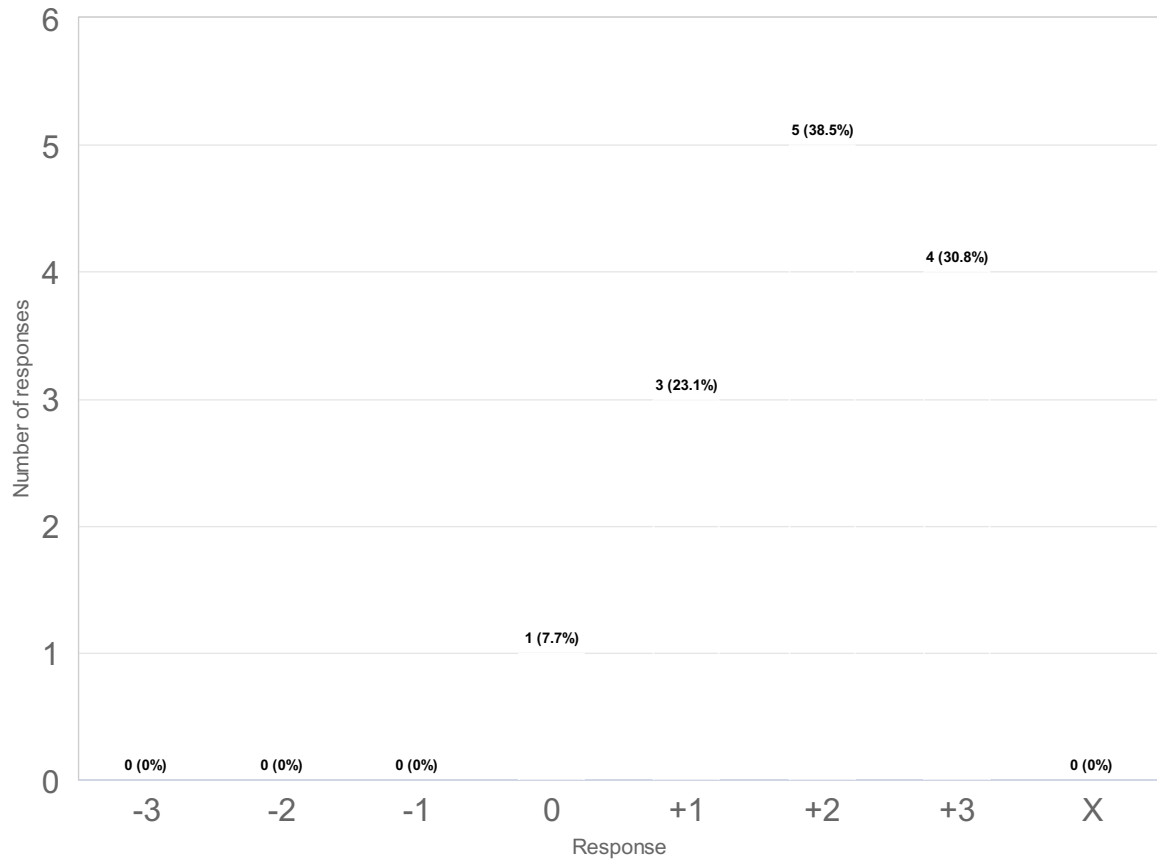
13. I understood what I was expected to learn in order to obtain a certain grade



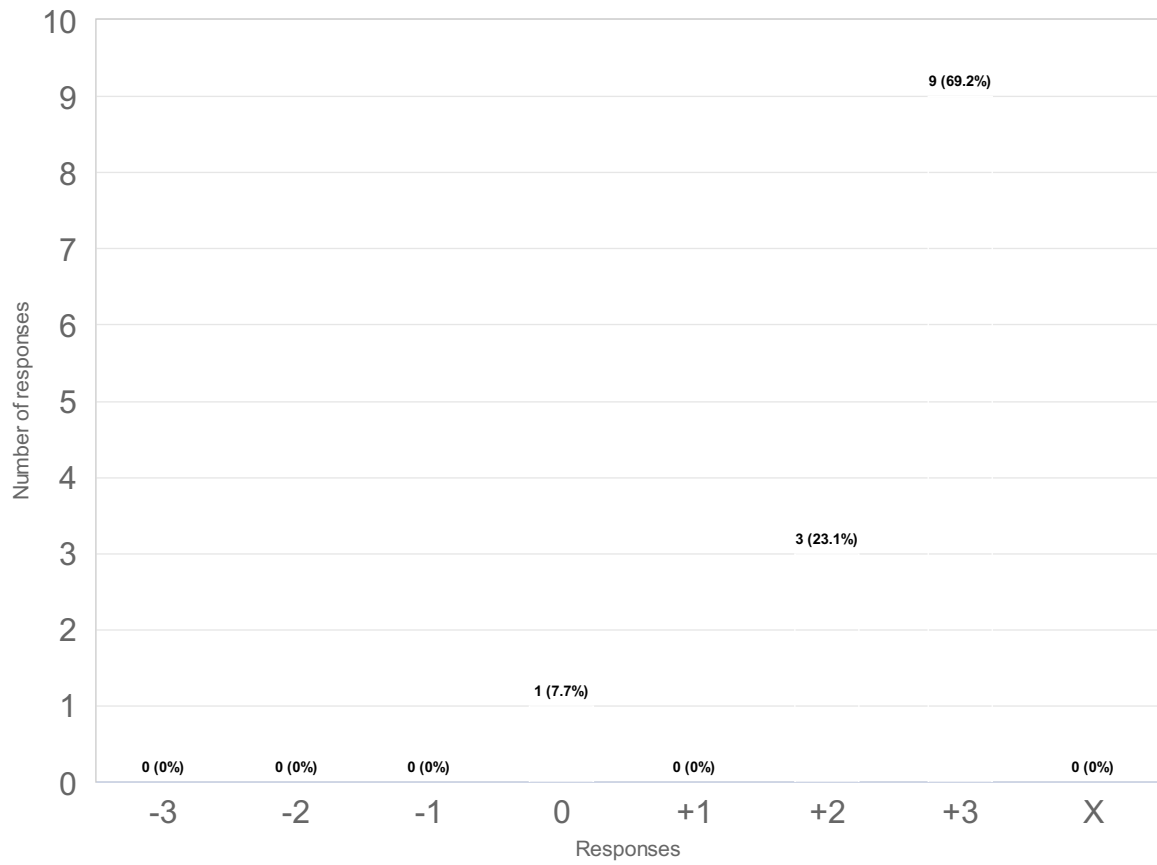
14. I received regular feedback that helped me to see my progress



15. I could practice and receive feedback without being graded

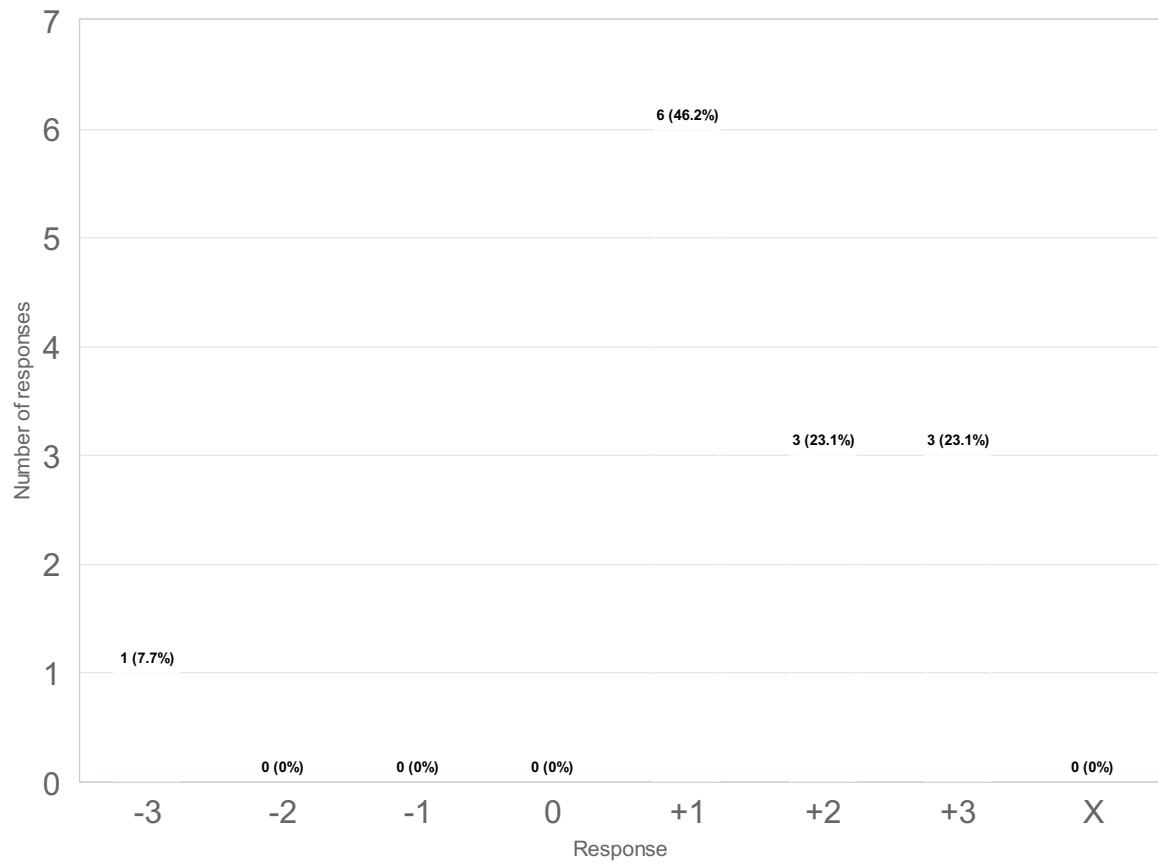


16. The assessment on the course was fair and honest

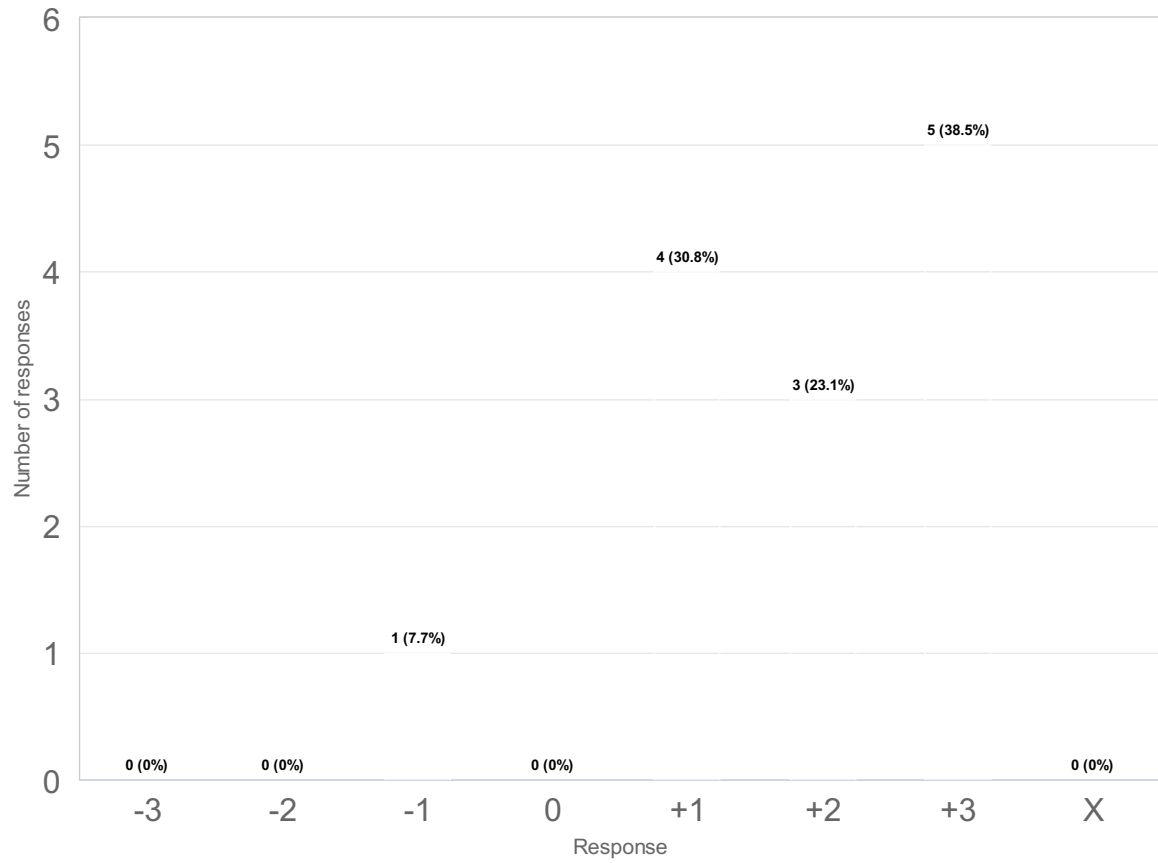




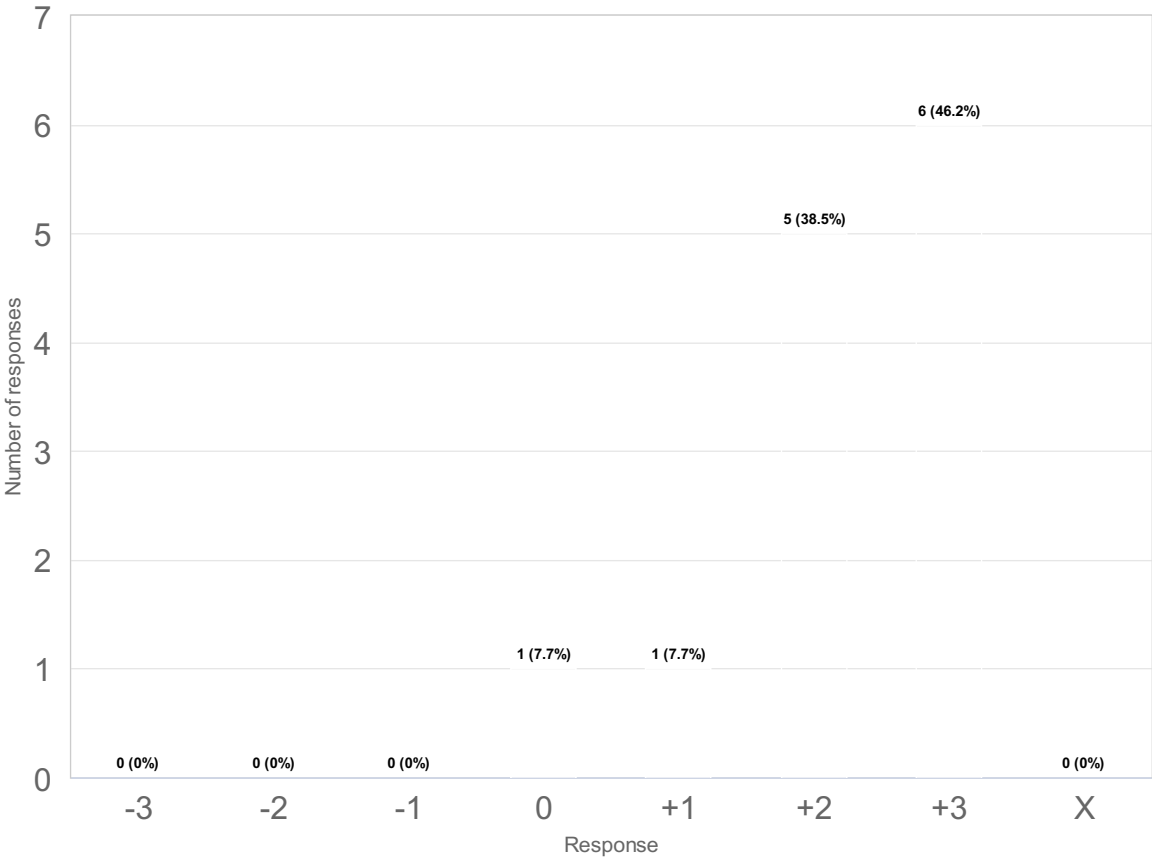
17. My background knowledge was sufficient to follow the course



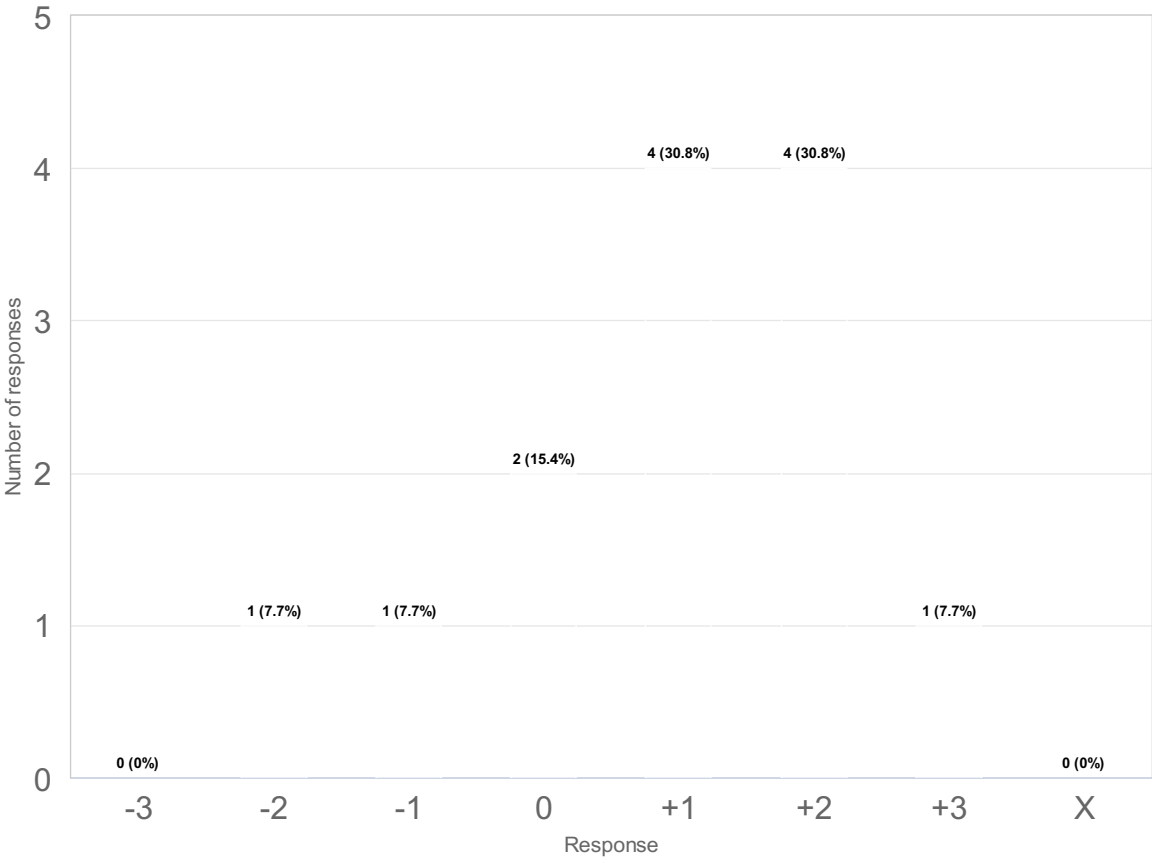
18. I regularly spent time to reflect on what I learned



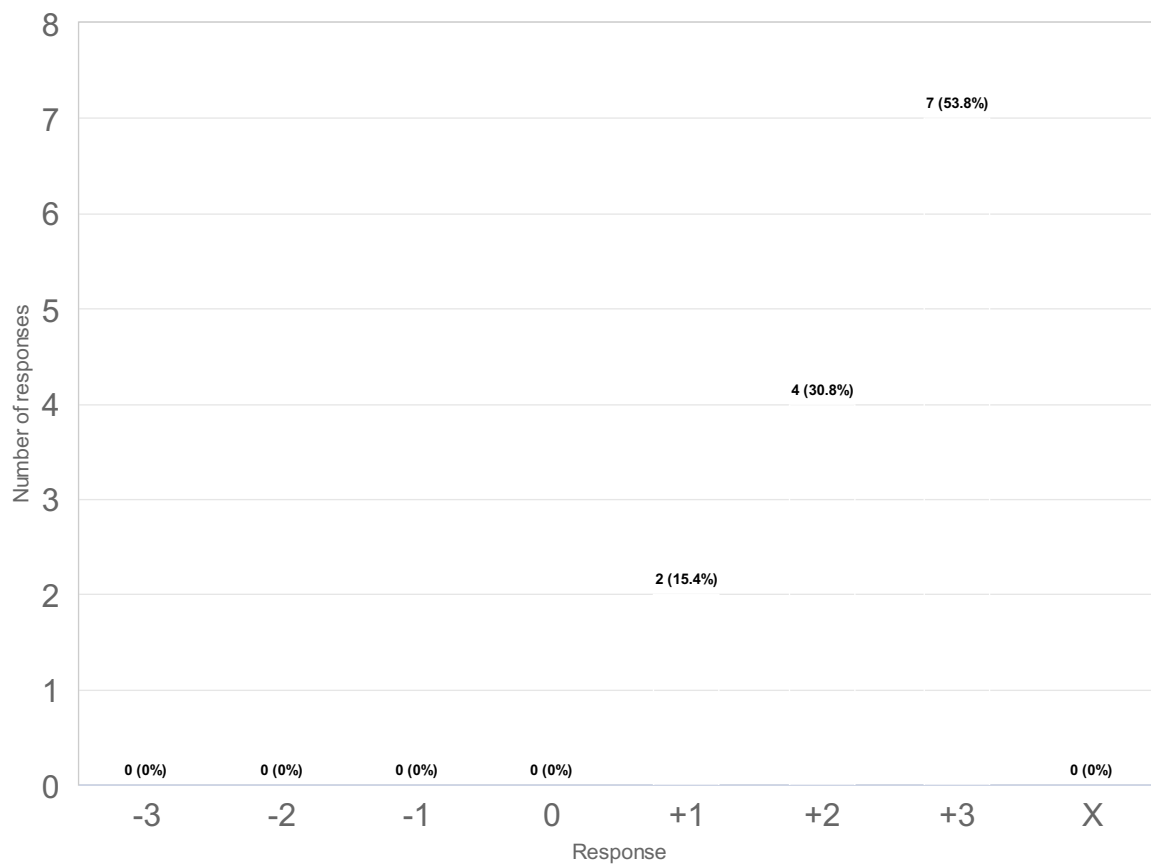
19. The course activities enabled me to learn in different ways



20. I had opportunities to influence the course activities



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

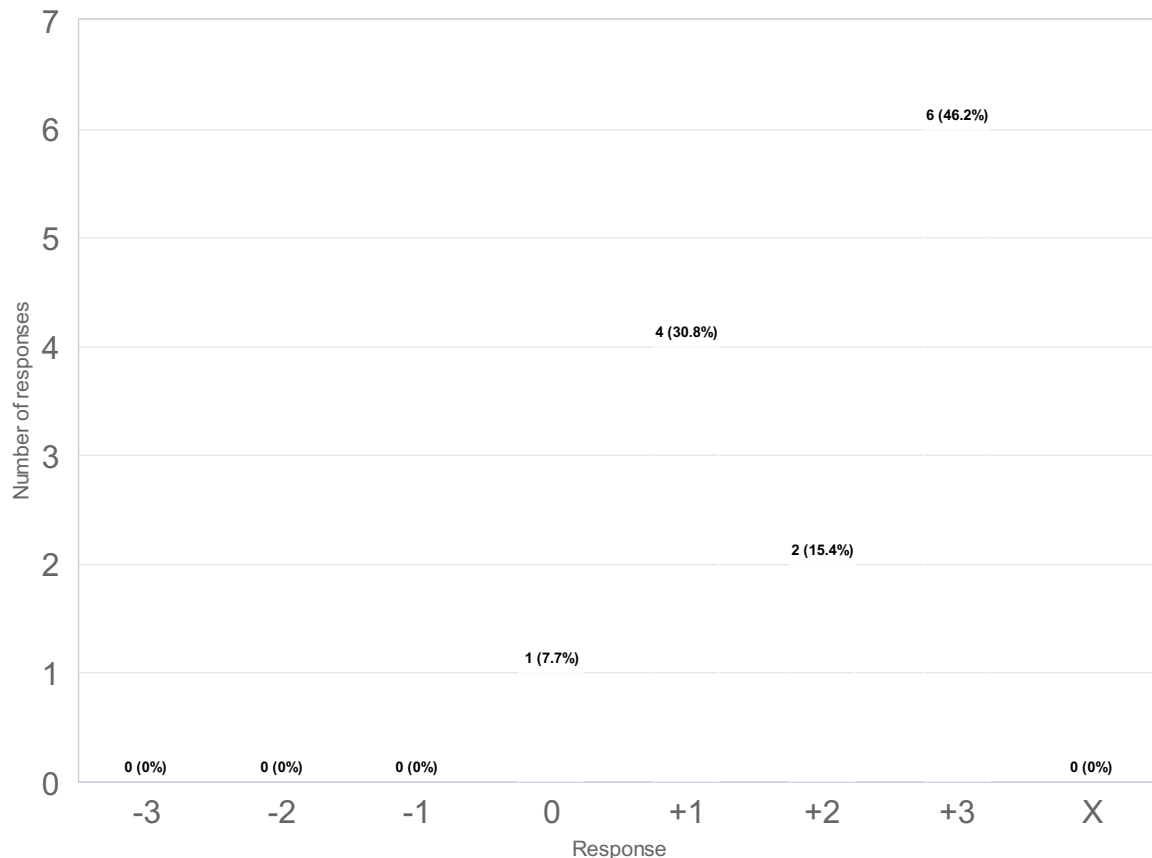


## Comments

Comments (My response was: +2)

It was possible during reflection lectures. But in tutorials, it was not so much helpful some of the time since we were all new to the problems and were not able to solve so much.

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



## Hur påverkades dina studier av COVID-19?

Hur påverkades dina studier av COVID-19?

Seldom.

Maybe we could have also physical lectures for learning the topics in addition to reflection lectures but I think we have managed to have a good knowledge in that course despite the COVID-19.

I was not affected particularly by that.

There was a novel lecture organization combining virtual prerecorded lectures and on campus reflection lectures. It turned out to be excellent.

A lot

Sometimes it is a little dangerous to attend the course on site. But I prefer that way because I don't like studying online.

Made them less engaging, harder to communicate with other people from the same class and to help each other

Not a lot of courses in class but it was still ok

yes, i didn't have any hollidays after my exams, so it was a bit difficult to go back to work

Some lectures are turned to online. I think in-class lectures are always in a better effect.

## Hur var din studieupplevelse med de nyligen inspelade onlineföreläsningarna?

Hur var din studieupplevelse med de nyligen inspelade onlineföreläsningarna?

Not good because I can't discuss with teacher. But it's better in some aspect that when I don't understand, I can watch the video replay.

They were really useful to have the lectures before getting into details in the course book.

Online lectures were good and if we have problems we can ask to the professor during the lecture in class.

I liked the fact that recorded lectures were concise. Since we have the ability to stop, go back and watch again, the lecture can be condensed into 30-45 min, which feels much more manageable to go through it thoroughly. Other courses had very long recorded lectures that defeated the purpose.

Good.

Perfect!

It is a good way because I can watch the recorded lectures whenever I want.

The structure of the course was well thought out

a little bit less interested by the course

It's good. The teacher uploaded the wrong files sometimes anyway.

### Hur var din studieupplevelse med de nya reflektionsföreläsningarna?

Hur var din studieupplevelse med de nya reflektionsföreläsningarna?

A good form of open discussion, I have never experienced it before.

They were really good and I think they should be always given because online lectures alone would not be sufficient since we would not be able to ask anything to Professor.

In general, reflection lectures were a good review of the concepts and a nice opportunity to discuss with your classmates, which helps you realize better what you understand and what you don't. I think mentimeter worked fine and was a good tool to engage. Maybe I was missing a bit of deeper insights in some aspects

Good. But it would have been really good to have the questions on canvas to revisit them.

Amazing, reflection is the key to learning by heart I feel.

To be honest, I prefer the traditional way of teaching. Because I think the new reflection is not so useful for me. When we attend the reflection lectures, sometimes I have already forgot some knowledge of the online lectures.

The were useful

ok

If I didn't get through in the class, so I have to copy the statements and review them after class.

### Hur var studieupplevelsen under tutorial lektionerna?

Hur var studieupplevelsen under tutorial lektionerna?

Useful for exams.

Tutorials were good and assistants were so helpful. But I think trying to solve questions at the beginning are hard because we are coming to tutorials with no practical experience and even though we knew the topic it would be better if we had a prior examples of equestions so that we can come prepared to the tutorials.

Tutorials were well organised as I said before.

Tutorials did help me to solidify theory concepts. Explanations of the exercises were generally very good by both TAs. Some classes extended beyond the time limit, maybe time management is something that can be improved so that we have enough time to correct the last exercise.

Good.

I only attended 3 tutorials. The experience were good in those 3.

Pretty good. I have learned a lot.

Not as optimal as I thought it would be

ok

Good chances for we to practice to solve problems.

### Hur var studieupplevelsen under projektarbetet?

Hur var studieupplevelsen under projektarbetet?

The ability of teamwork, written expression, matlab programming, and calculation derivation has been improved in all aspects.

Projects were really helpful to understand to concepts practically and it helped me to learn the best reporting format and I realized my flaws in project preparation. They really force student to study the topics that they may not understand well and I think that is a requirement in that course.

Project are good to apply what we learn in course in a concrete situation but it takes time so we need to be well organised to not be overloaded.

I really engaged on both projects, which I think are a very good tool to make us face problems and relate them to theory. I liked the feedback-and-resubmit approach. A note for improvement would be to include sampling, PAM and reconstruction in a project, which I think would help us improve our understanding in these topics.

Good.

Very good!

Pretty good. It is a good way to practice our writing ability and teamwork.

Interesting

ok

### Hur var din studieupplevelse totalt sett?

Hur var din studieupplevelse totalt sett?

This is my first semester of KTH master's study and it left a very good impression on me.

Overall it was satisfactory and both Professor and assistants were helpful in any moment of the course.

Many concepts were new so it was a hard course for me but essential for my studies.

My learning experience with this course was nothing short of excellent.

Good.

Even tho I may fail the exam cause it look terrifying. I still feel I learned a lot.

Overall, it is not bad.

Good

ok

It seems that the problems in the exam are more and more and more difficult compared to the tutorials...