



Report - EF2240 - 2017-11-13

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

COURSE DESIGN

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

The general goal is to give an overview of the space environments in the solar system (and to some extent outside of it), and the plasma physics applications used in describing them.

The main material is presented in the lectures which applies basic plasma physics on a number of space phenomena. Simple quizzes during the lectures gives a first application of the material. In the tutorials more quantitative examples are shown, and the students can practice themselves in the mini.groupworks. The latter consists of randomized groups of three student, who will solve a hand-in exercise, which will give bonus points. The exercise are aimed at simulating exam questions, but with some more explicit clues.

No big changes since last time.

THE STUDENT'S 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?

Less than expected. One comment: "Lectures were detailed and thorough, did not need much study outside of that until exam week."

This is a bit discouraging. I will need to communicate that it is good to work with the material continuously.

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?

About the same as usual.



OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT

What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

In general the lowest scores are about the possibility to choose how to learn and to get feedback without getting graded, i.e. these questions:

2. I explored parts of the subject on my own
3. I was able to learn by trying out my own ideas
15. I could practice and receive feedback without being graded
20. I had opportunities to choose what to do

I will have to think about creating some kind of test, where you get feedback without getting graded. One idea would be to have a few mock exam questions, which the students can solve on their own as a home exercise. We then go through them together. In principle this is the way the tutorial problems could work, but maybe they really don't in practice. Therefore it could be better to explicitly point to one problem before each tutorial that can act as such a mock test.

ANALYSIS OF THE LEARNING ENVIRONMENT

Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

In general the students are happy about the course and the support they get.

E.g. answers to the open question "What was the best aspect of the course:

"The general atmosphere of it."

"The practical situations where the theory can be applied was discussed along with the course."

"Very nice explanations of the teacher during the lectures."

"The mini-works were the best aspect of the course because it allows to understand lectures."

"How the lecturer was very organised and cared about the course. Just listening him talk you could understand the fundamentals and I really enjoyed being in the class"

ANSWERS TO OPEN QUESTIONS

What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

See above.

PRIORITY COURSE DEVELOPMENT

What aspects of the course should primarily be developed? How could these aspects be developed in the short or long term?

I did not have time to update the course according to last years priority. Before next year, at least point 1 will have to be done. I have now added a point about the "mock exam questions"

- 1) Update minigroupworks
- 2) Include a mock-exam problem for each tutorial, to be solved by the students beforehand (if they want). Show how I would correct it.
- 3) Update tutorials, add more old exam questions.
- 4) Update some parts of the lectures.

Kursdata 2018-06-13

EF2240 - Rymdfysik, HT 2017

Kursfakta

Kursen startar:	2017 v.35
Kursen slutar:	2017 v.43
Antal högskolepoäng:	6,0
Examination:	TEN1 - Rymdfysik, 6,0, betygsskala: A, B, C, D, E, FX, F
Betygsskala:	A, B, C, D, E, FX, F

Bemanning

Examinator:	Tomas Karlsson <tomask@kth.se>
Kursomgångsansvarig lärare:	
Lärare:	
Assistenten:	

Antal studenter på kursomgången

Förstagångsregistrerade:	1
Totalt registrerade:	3

Prestationer (endast förstagångsregistrerade studenter)

Examinationsgrad ¹ [%]	Det finns inga kursresultat inrapporterade
Prestationsgrad ² [%]	Det finns inga kursresultat inrapporterade
Betygsfördelning ³ [%, antal]	Det finns inga kursresultat inrapporterade

1 Andel godkända studenter

2 Andel avklarade poäng

3 Betygsfördelning för godkända studenter

EF2240 - Rymdfysik, HT 2017

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Bemanning	
Examinator:	Tomas Karlsson <tomask@kth.se>
Kursomgångsansvarig lärare:	
Lärare:	
Assistenter:	

Antal studenter på kursomgången

Förstagångsregistrerade:	47
Totalt registrerade:	49

Prestationer (endast förstagångsregistrerade studenter)

Examinationsgrad¹ [%]	100.00%
Prestationsgrad² [%]	100.00%
Betygsfördelning³ [%, antal]	A 34% (16) B 23% (11) C 21% (10) D 13% (6) E 9% (4)

1 Andel godkända studenter

2 Andel avklarade poäng

3 Betygsfördelning för godkända studenter

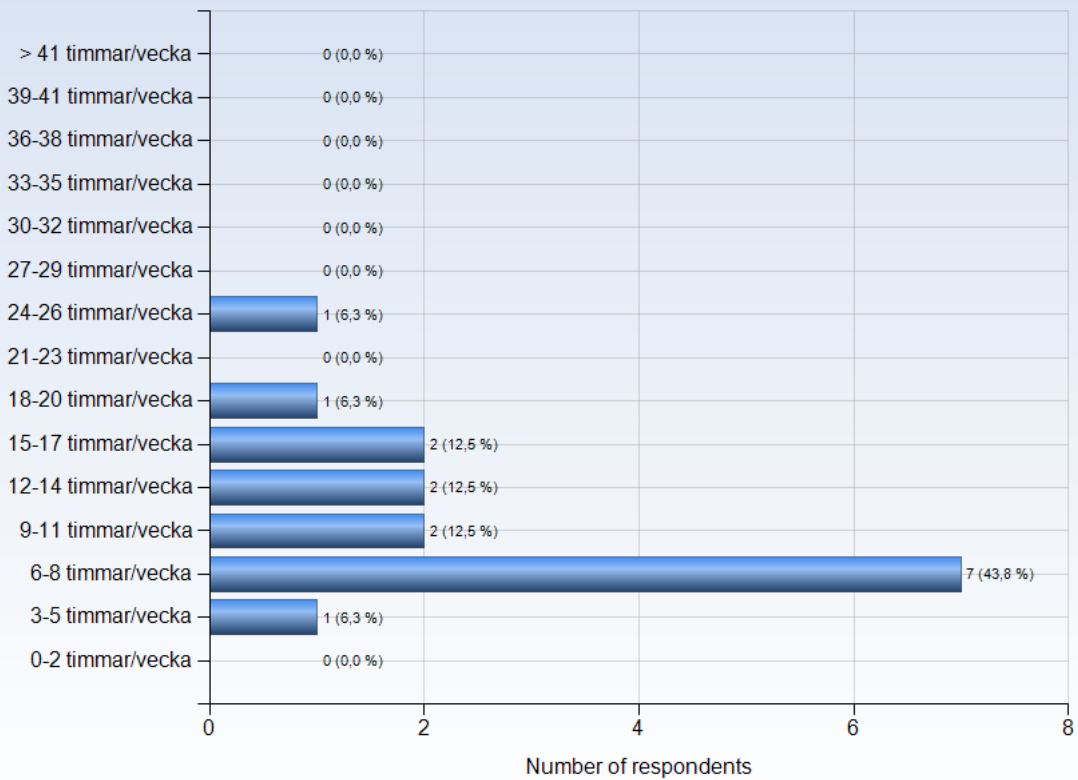


EF2240 - 2017-10-09

Antal respondenter: 48
Antal svar: 16
Svarsfrekvens: 33,33 %

ESTIMATED WORKLOAD

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



Comments

Comments (I worked: 6-8 timmar/vecka)

More hours during the weeks before the exam.

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

Lectures were detailed and thorough, did not need much study outside of that until exam week

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

The workload is well balanced



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:

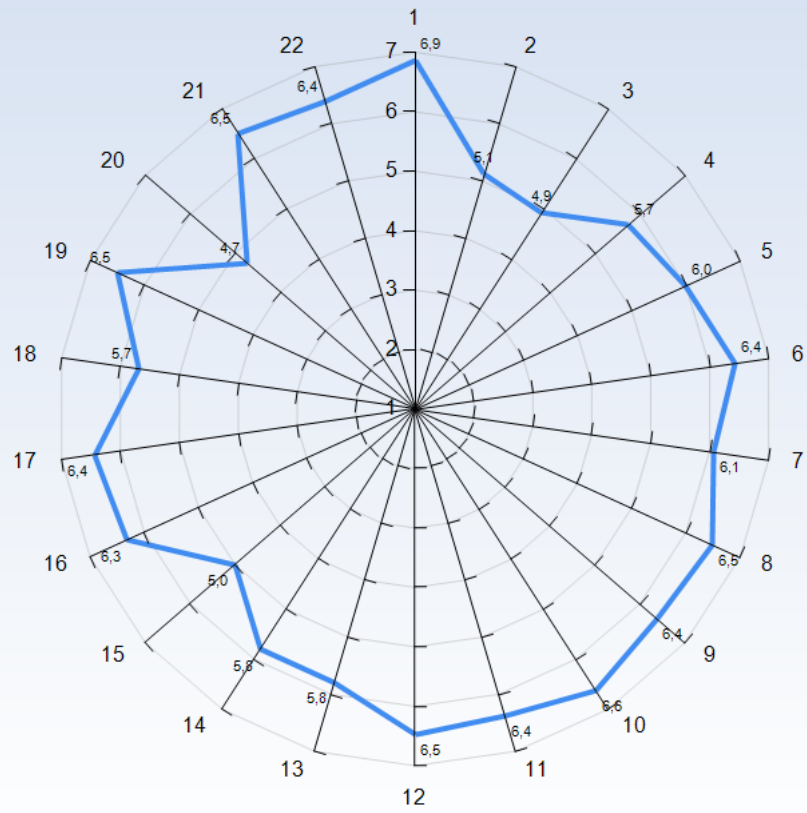
1 = No, I strongly disagree with the statement

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





KTH Learning Experience Questionnaire v3.1.3

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. I understood how the course was organized and what I was expected to do (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 choices

- 19. I was able to learn in a way that suited me (m)
- 20. I had opportunities to choose what to do (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, intriguing or important
- b) We can speculate, try out 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 yet supportive environment
- d) We feel that we are part of a community and believe that other people have faith 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 sufficient background knowledge to manage the present learning situation
- g) We can learn inductively by moving from specific examples and experiences to general principles, rather than the other way around
- h) We are challenged to develop a proper understanding of key concepts and successively create a coherent whole of the content
- i) We believe that the work we are expected to do will help us to reach the intended learning outcomes
- j) We can try, fail, and receive feedback in advance of and separate from any summative judgment of our efforts
- k) We believe that our work will be considered fairly and honestly
- l) We have sufficient time to learn and devote the time necessary to do so



m) We believe that we are in control of our own learning, not manipulated

n) We can work collaboratively 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.

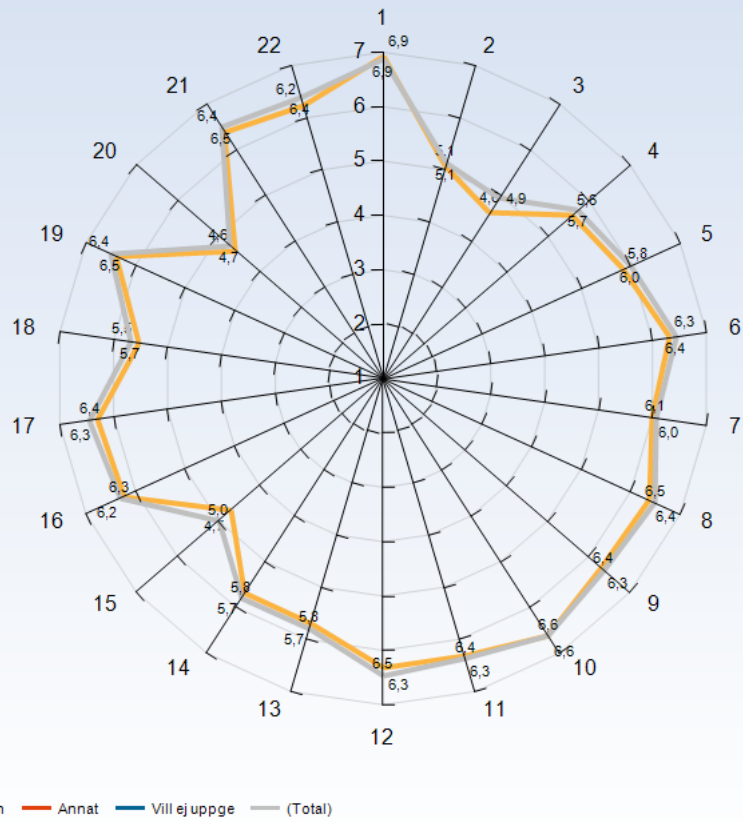
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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.

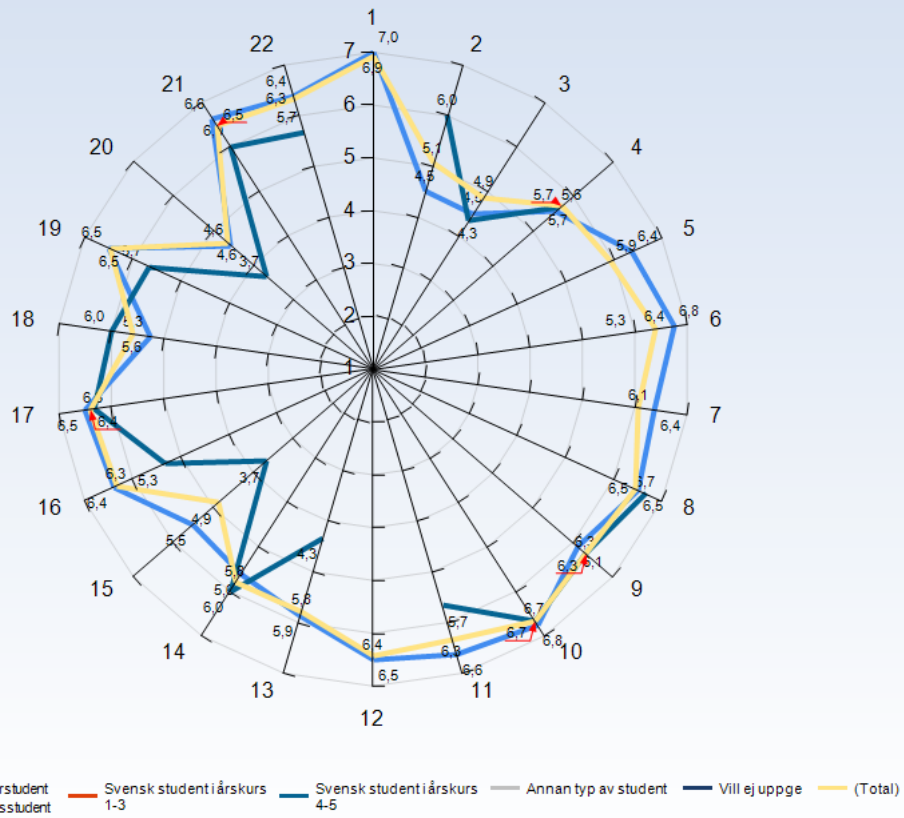
Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.

Average response to LEQ statements - per gender



Comments

Average response to LEQ statements - per type of student



Comments

Comments (I am: Internationell utbytesstudent)

I am an exchange student studying Electrical and Electronic engineering

Comments (I am: Annan typ av student)

Double-Degree international student



GENERAL QUESTIONS

What was the best aspect of the course?

What was the best aspect of the course? (I worked: 3-5 timmar/vecka)

The general atmosphere of it. The mid lecture test are important to keep high the attention level, and helps to test if what is been explained has been understood correctly. The comment after the lecture are always addressed in the next class which is a god thing.

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

The interesting topics we covered

The practical situations where the theory can be applied was discussed along with the course.

Very nice explanations of the teacher during the lectures. Most of the concept were clear. The course was not too theoretical and was based on the physical phenomenon rather than on the equations.

The mini-works were the best aspect of the course because it allows to understand lectures. Everyone in the group propose his ideas and cooperate which makes it very interactive.

Easy understanding of basic space physic, always interesting

How the lecturer was very organised and cared about the course. Just listening him talk you could understand the fundamentals and I really enjoyed being in the class

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

The ease with which I could follow the course. The key concepts were simply derived, emphasizing the understanding of them.

Fascinating subject of study

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

I really enjoyed the minigroupworks, and think it is an interesting way to learn and get a better feel for the

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

Excellent lectures and lecture slides. Printed course material was distributed at the 1st lecture. Regular tutorials and minigroup works and also quizzes during the class helped to reflect on what is being taught.

Teacher knew what he was doing both in terms of the material but also pedagogical, no complaints. Also plenty of current research blended into the course topics which I enjoyed.

What would you suggest to improve?

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

Maybe to try and find a red thread that binds all the topics together into a whole.

Perhaps include a mini project

Maybe at the end of the course a global summary of all the phenomenon that have been studied: what the difference between them and how they all work together.

Maybe have more mathematical explanation in the slides and have the relevant pages of the book where to find the needed information or if not in the book maybe any other source.

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

Might have some experiments during classes (such as Magnus effect demonstration, it would nice to see it "live"... probably most of the participants have never seen it live)

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

Nothing really, since the course is only 6 ECTS I find it hard to come up with without adding to much work. Otherwise I think it would be good to have more tasks with real satellite data.

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

This course should be a first year course in the masters program. For people that know they want to pursue the space track, it would be much more beneficial to take this course immediately.



What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 3-5 timmar/vecka)

Do all exercise assigned, even the tutorial, because they will help you to succeed in the exam

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

Don't expect past exams to give you an indication of what will come in future exams...

Solve the tutorials before attending the mini group work. This will help not only for mini group work, but also for final exam.

Reading the course text book before the course and preparing the tutorials in advance.

Go to lectures and pay attention you will learn much more and much faster than reading on your own

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

Have fun.

/

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

take time to read through the lecture notes on the same day it is taught.

Attend the lectures, practice old exams and tutorials

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 9-11 timmar/vecka)

No.

/

SPECIFIC QUESTIONS

What did you think about the lectures?

What did you think about the lectures?

The lectures were well organised, and any doubt left after them were addressed the next class

Great lectures in general

Useful to attend, straightforward, kept you awake.

There were simple, straight forward. Discussed everything that was needed to understand the course in a proper way

Excellent.

Very dynamic and entertaining lectures. Explanations and slides were clear and interesting.

Understandable and well constructed

The lectures where great and the lecturer was good at explaining without getting to complicated.

Very good, no complaints

Nice and interesting, plus the participation questions on key aspects are a really good idea that makes the student a bit less passive during lectures

They were great, the lecturer has a great way of communicating what he wants and making students drawn to him



What did you think about the tutorials?

What did you think about the tutorials?

The tutorial are useful to have some general understanding of dimensions and order of magnitude involved. But not being mandatory during the course, one may do it preparing the exam. Which can be useful. But they differ greatly from how exams are structured.

Good way of teaching us how to approach practical problems

Useful but it might be better to have more time. To digest the problem in a slower pace.

It gave a feel of magnitude of physical terms, and made us understand what necessary and proper assumptions one can make to simplify a complex problem.

Good way to understand the concept through problem solving.

Most of the time the exercises truly helped to understand concepts and how to use the equations when talking about the physical phenomenon.

The tutorials were fun and interesting, and very useful relating to the exam.

Good also

They where okay maybe a little on the easy side.

Tutorials themselves were good, helped me to see the teacher approach similar problems we were given

/

I thought they were a bit hard and a bit long I never managed to finish a tutorial before class

What did you think about the minigroupworks?

What did you think about the minigroupworks?

The minigrroup are a challenge to solve in a limited time. One should be able to solve them if has followed classes, but the outcome greatly depend on the other members preparation and "cooperational spirit".

They were alright, helped us think for ourselves

The same as the tutorials. They were very useful and it was good that we were randomly distributed among the all classmates. It would be better to have some more time.

Working in a group, we learned a lot. The one thing I learnt was to have lot of patience.

great to interact and work in group with a common mission.

A very nice way to work. Challenging but a true help to ask questions and understand unclear points.

The mini group works were a nice chance to work with other people on more interesting issues.

perfect

Really great, good to be able to discuss solutions and problem. But sometimes they got stressfull to just complete the task without real figuring on why stuff are on a certain way.

Mini groupwork is a good idea but does nothing for me in terms of actually learning the course. If groupwork and teamwork is mandatory for KTH, as it seem to be a factor in every course, projects are better.

Great idea, it's always nicer to work in groups than alone

Very good way of learning and applying the concepts learnt in class

What did you think about the exam?

What did you think about the exam?

The exam is always different form anything seen during tutorials and workshop. It also requires more theoretical Knowledge and lateral thinking

Felt like it did not encompass the entire course, and it focused a lot on a small part of the course.

Not hard at all but it caught me a bit unprepared.

It was neither too easy, nor too tough. Just right. All questions had one factor to think on. If you can figure that out, the question becomes simple.

Even when it was open exam, it was a tough for me, helped me realise the concepts I need to have a better understanding of.

The exam was maybe harder than the previous but the questions were interesting to solve.

More difficult than the tutorials and minigroupworks but I think its OK.

I think the exam was good, and it represented the important parts of the course in an interesting way.

More difficult than previous years, less of a 'typical exam' which isnt necessarily a bad thing but I was suprised at how different it was. As a whole I think it was reasonable but I might change my mind once the grading is out.

I think the time might be a bit long. Some exercices can be resolved very quickly, especially because we have our courses notes.

I thought there was a question that was quiet hard about the ring current and if i understood correctly what I had to do it required a lot of mathematical background which I didn't expect. The rest of the paper were straight forward.



What did you think about the course as a whole?

What did you think about the course as a whole?

The course gave a basic introduction to some fascinating phenomena, giving even to people without Knowledge on plasma physics a basic understanding of the underlying phenomena.

In general a good course, especially for those of us who want to go into the space industry

Good. Nothing to complain about

Really good introductory theory course. A practical lab or mini project would have added more value to it.

A very well organised course. One of the most interesting ones I have done. Will definitely recommend.

I really enjoyed this course both in its content and in the way it was presented.

I really appreciated taking this course

Great introduction course, very clear whats need to be done and easy to get to information. Lectures where great with a modern type of lecturing by having voting sheets and discussion around some problems.

Good, very satisfied but it leaves alot of areas unexplored since it is an introductory course. Would like for it to be one of the first courses during the master's programme

Good experience, interesting subject

It was a very interesting course with great material to give an insight in the physics of the space.

RESPONSE DATA

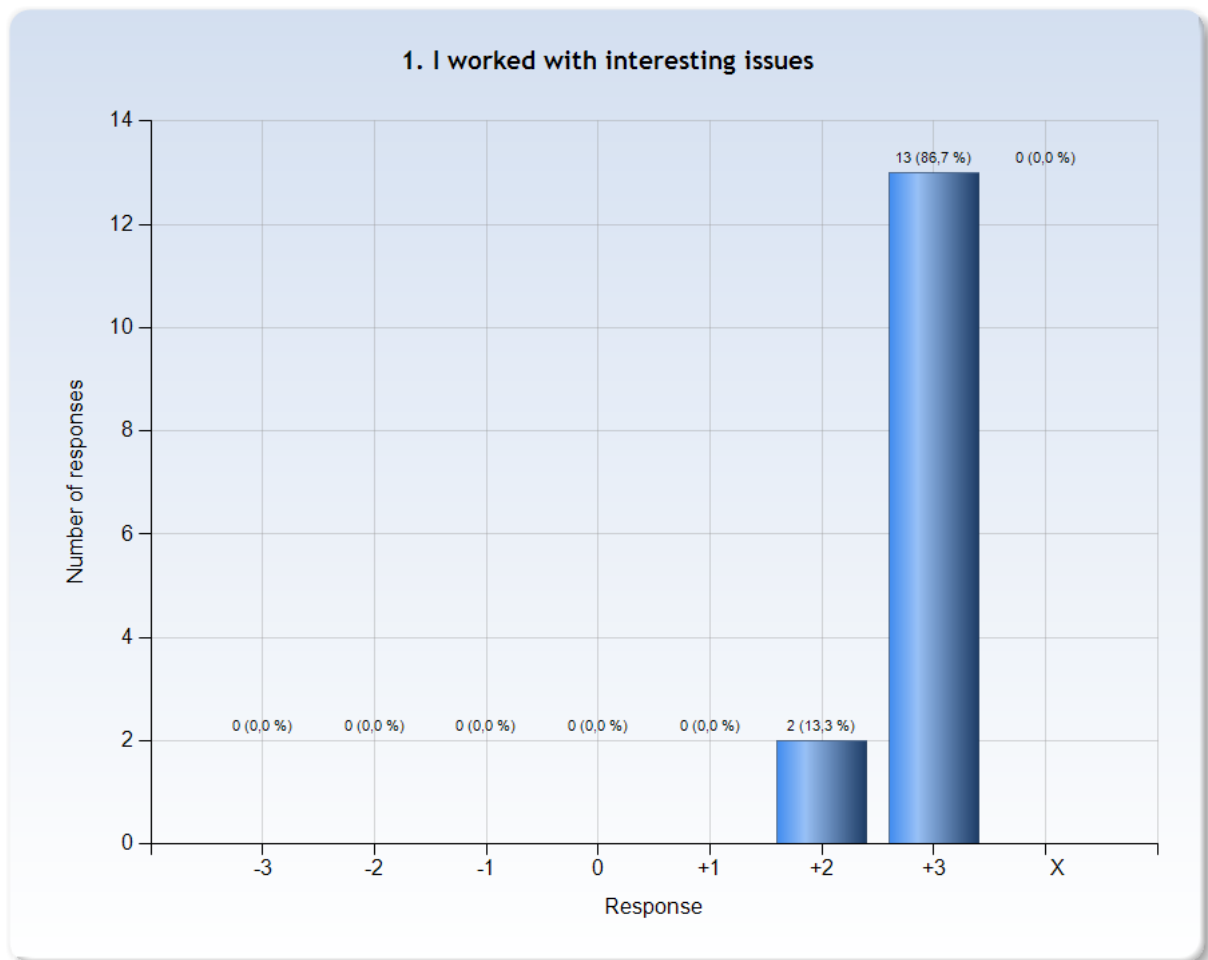
The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-3 = No, I strongly disagree with the statement

0 = I am neutral to the statement

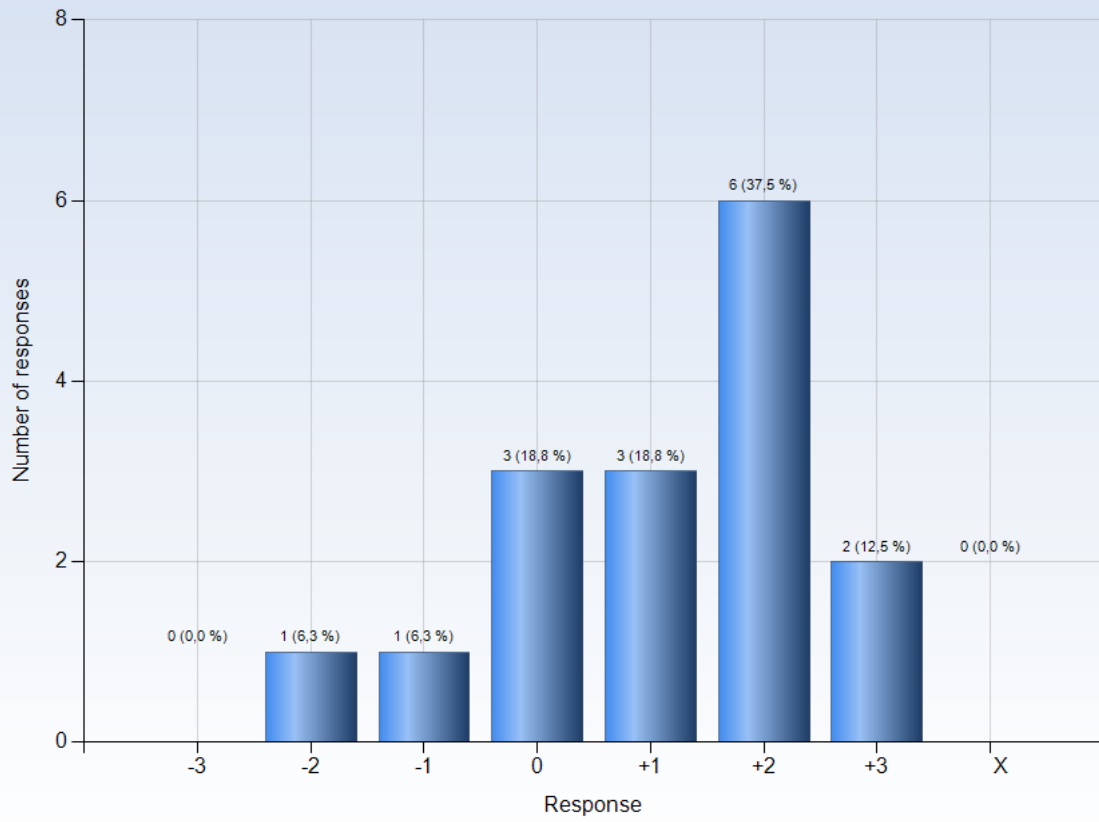
+3 = Yes, I strongly agree with the statement

X = I decline to take a position on the statement



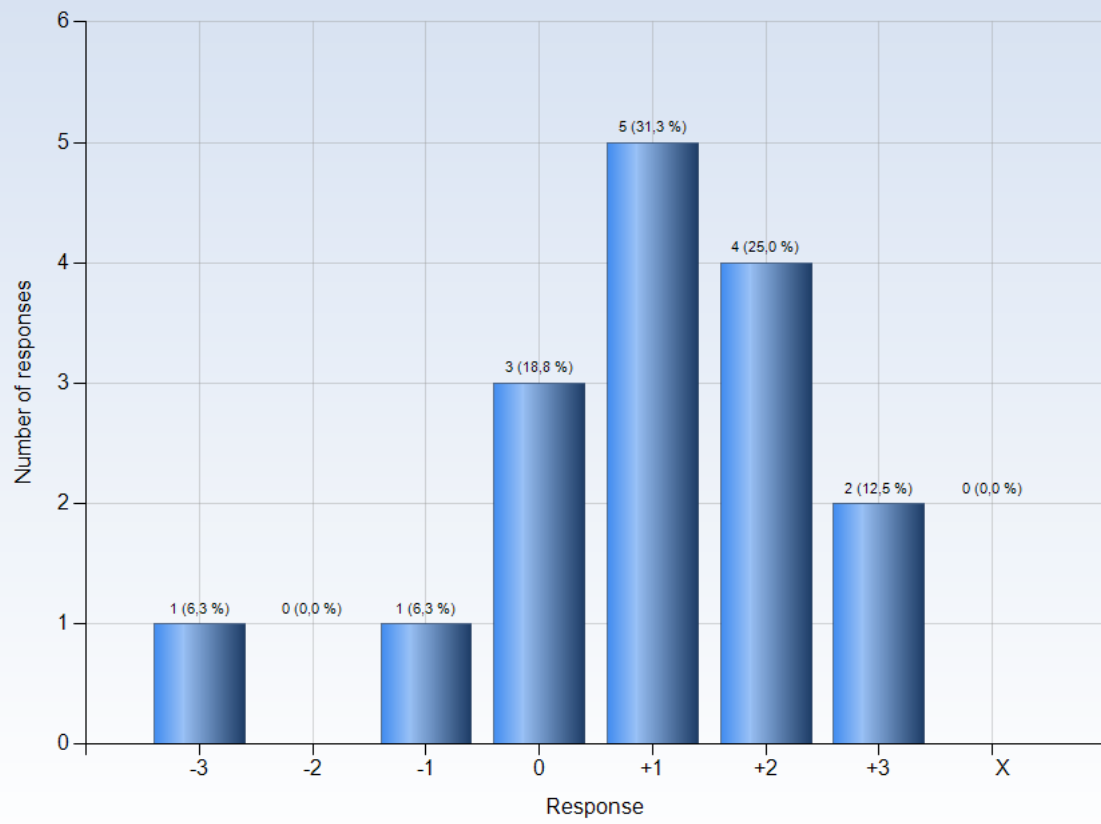
Comments

2. I explored parts of the subject on my own



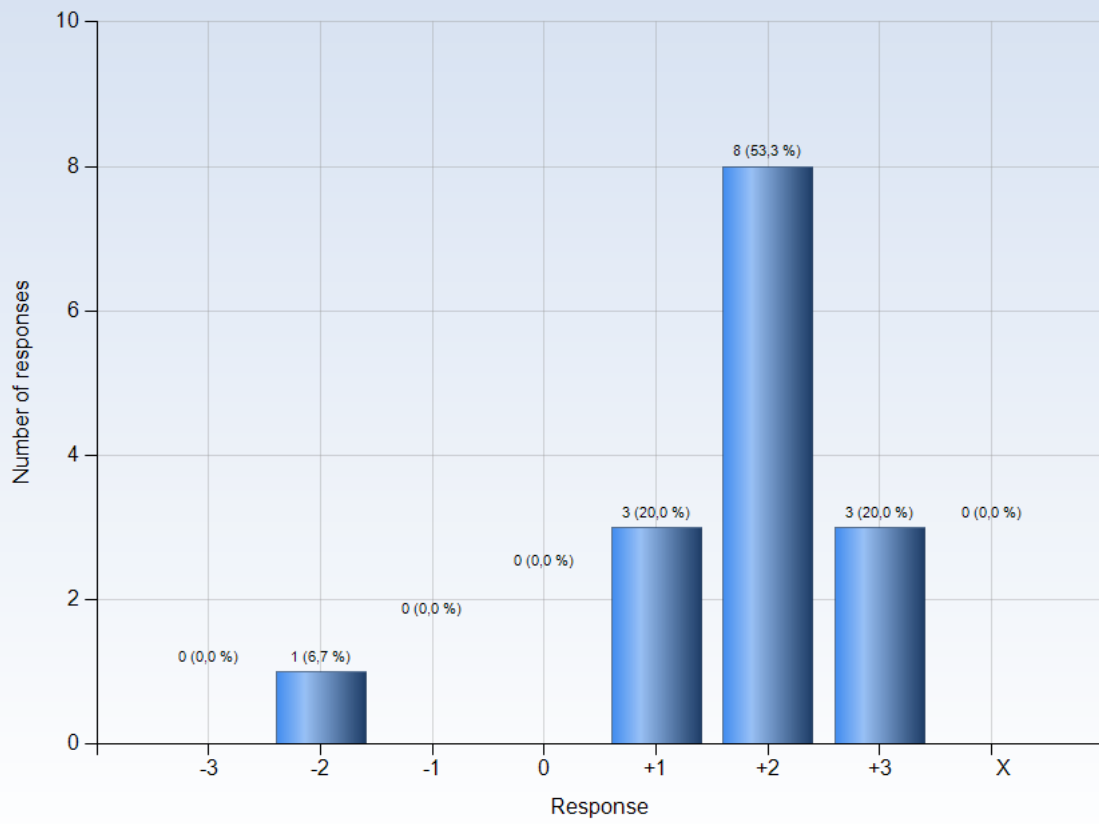
Comments

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



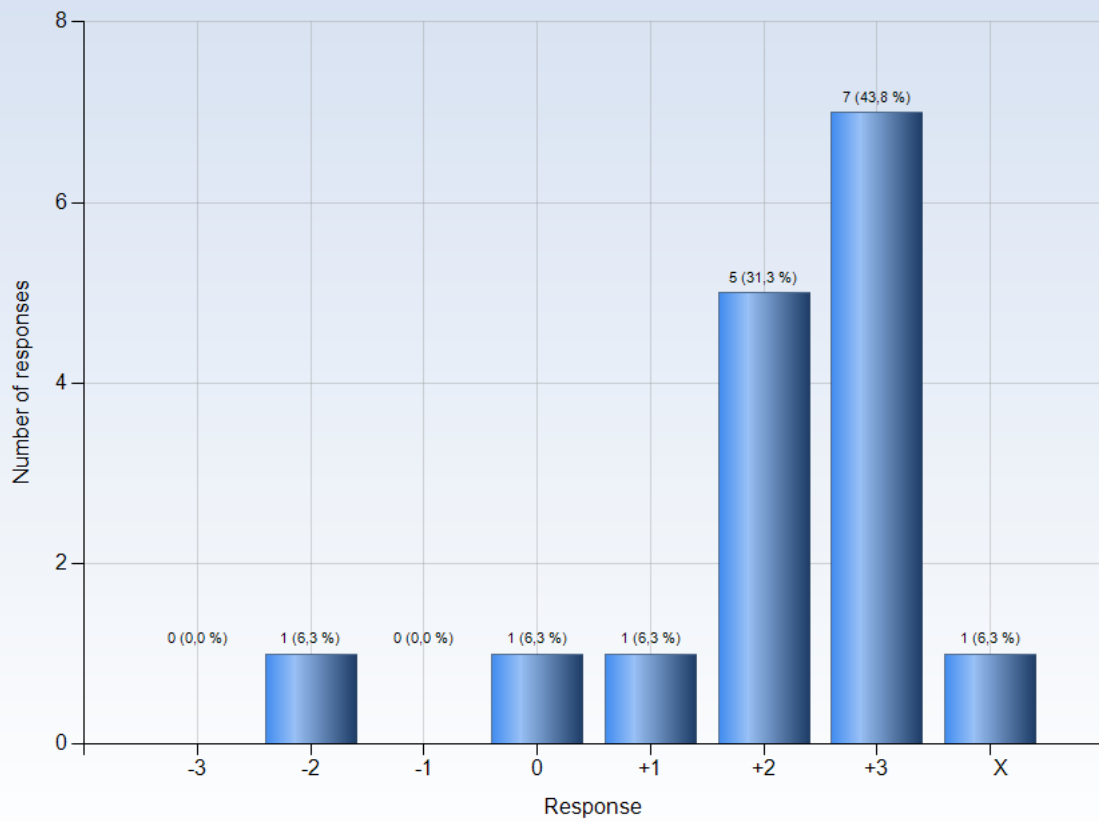
Comments

4. The course was challenging in a stimulating way



Comments

5. I felt togetherness with others on the course

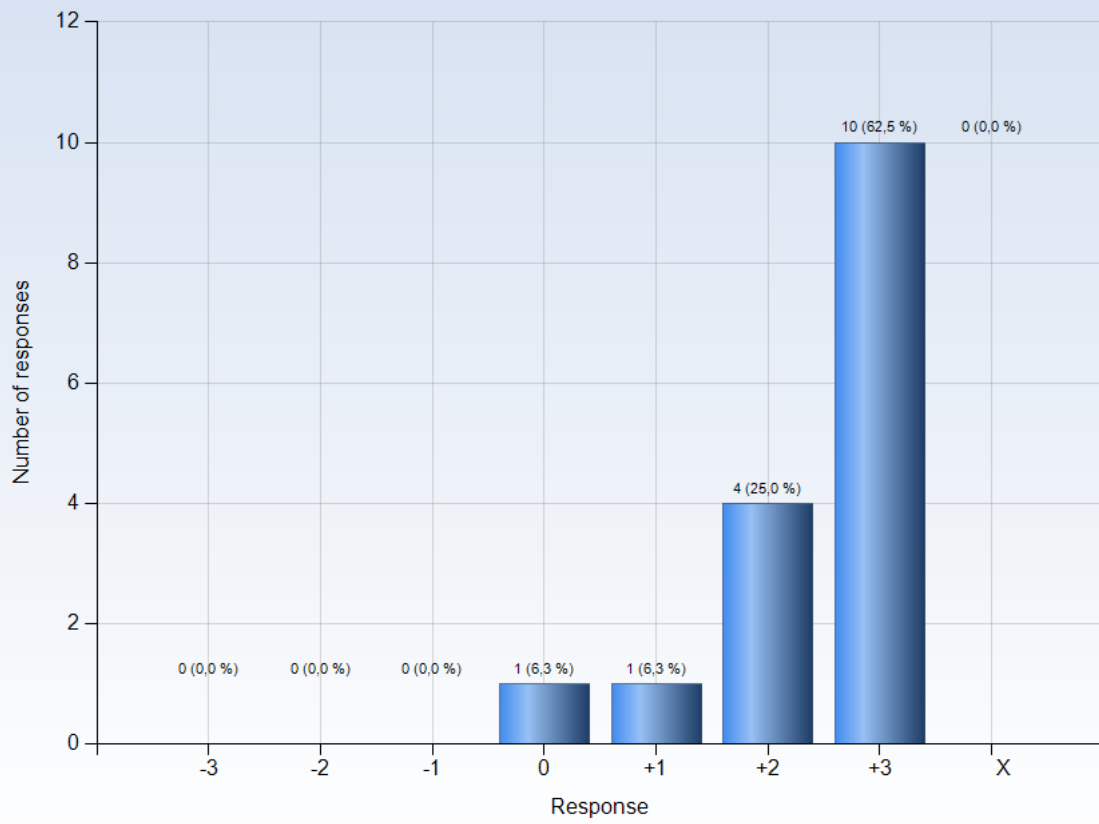


Comments

Comments (My response was: X)

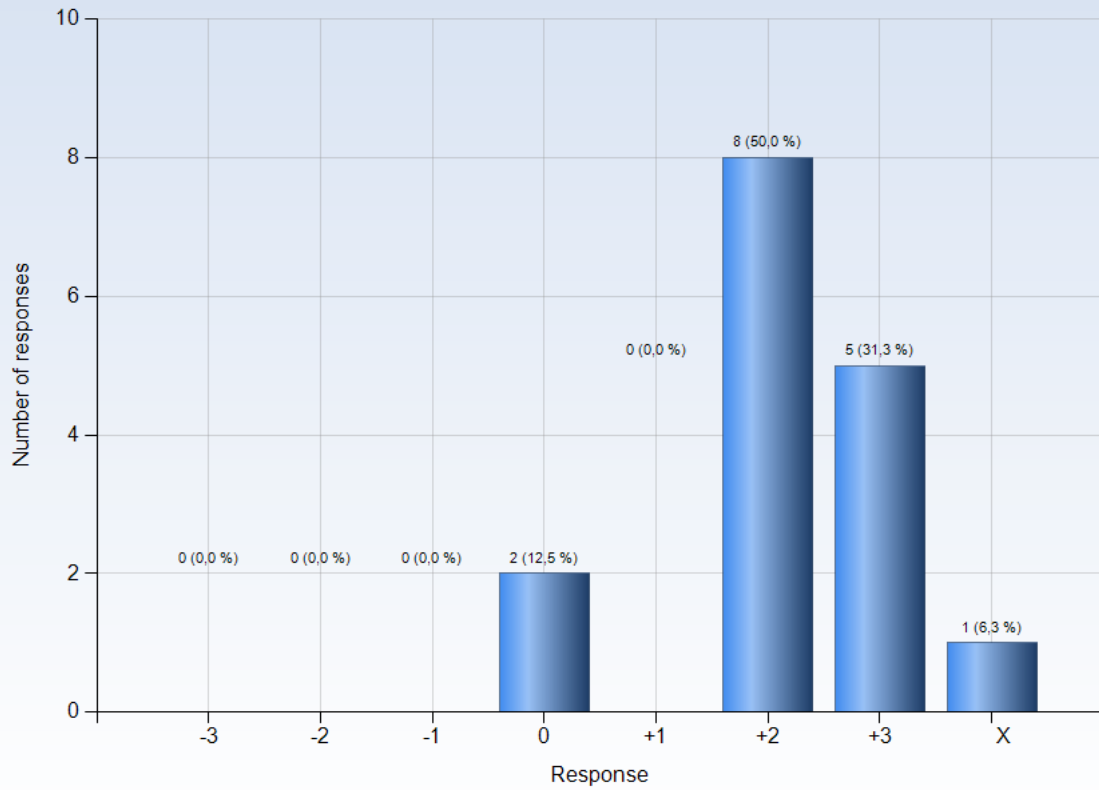
This is not relevant in my opinion

6. The atmosphere on the course was open and inclusive



Comments

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

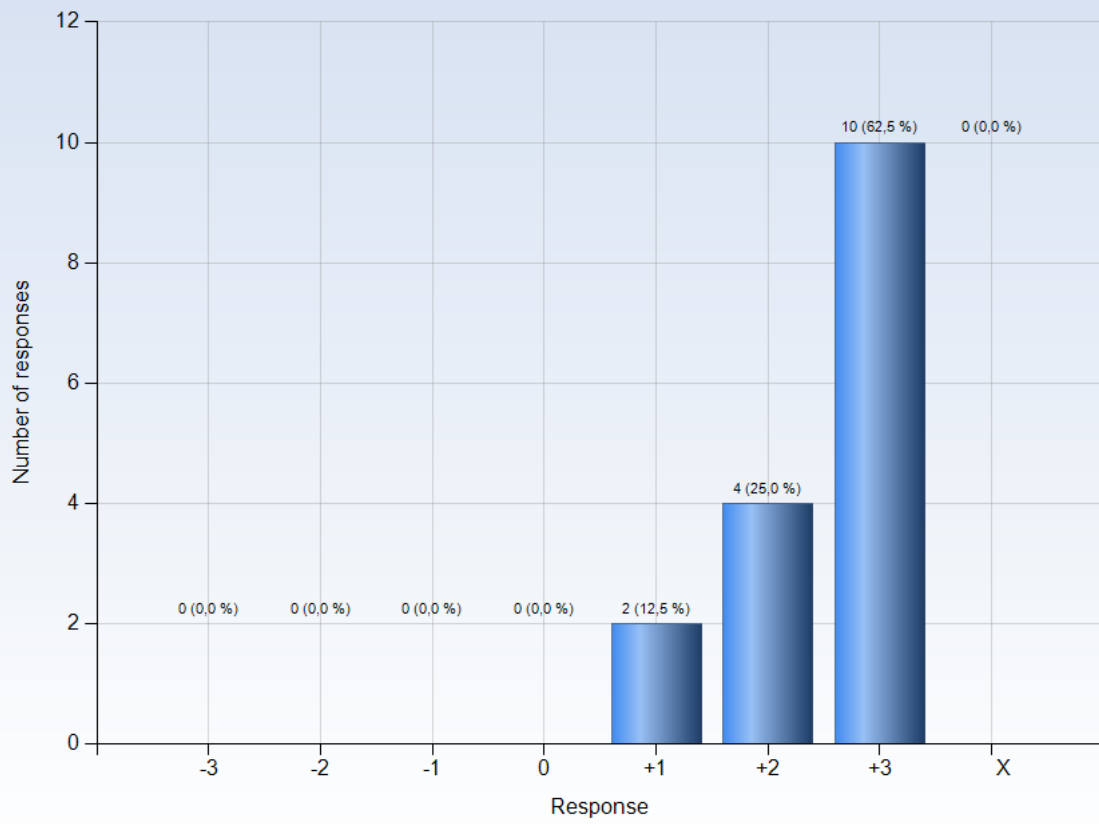


Comments

Comments (My response was: X)

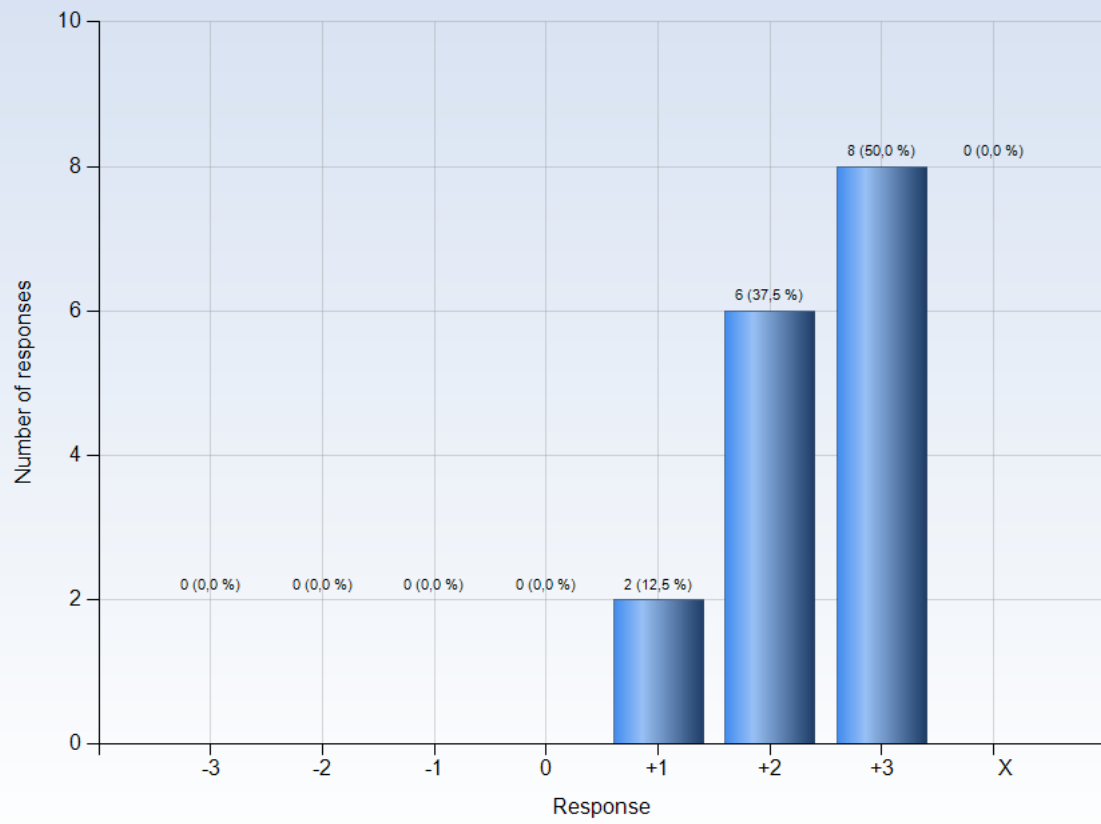
Never pay attention to LOs so not the right person to ask

8. I understood how the course was organized and what I was expected to do



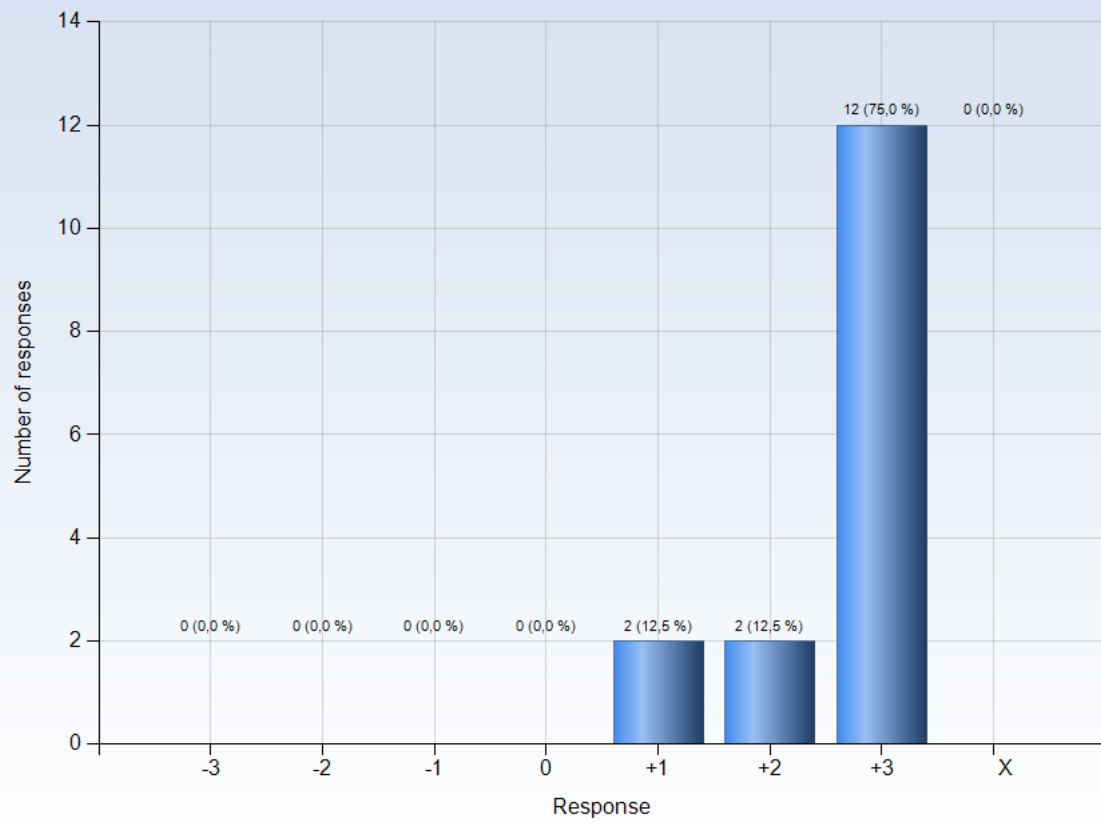
Comments

9. I understood what the teachers were talking about



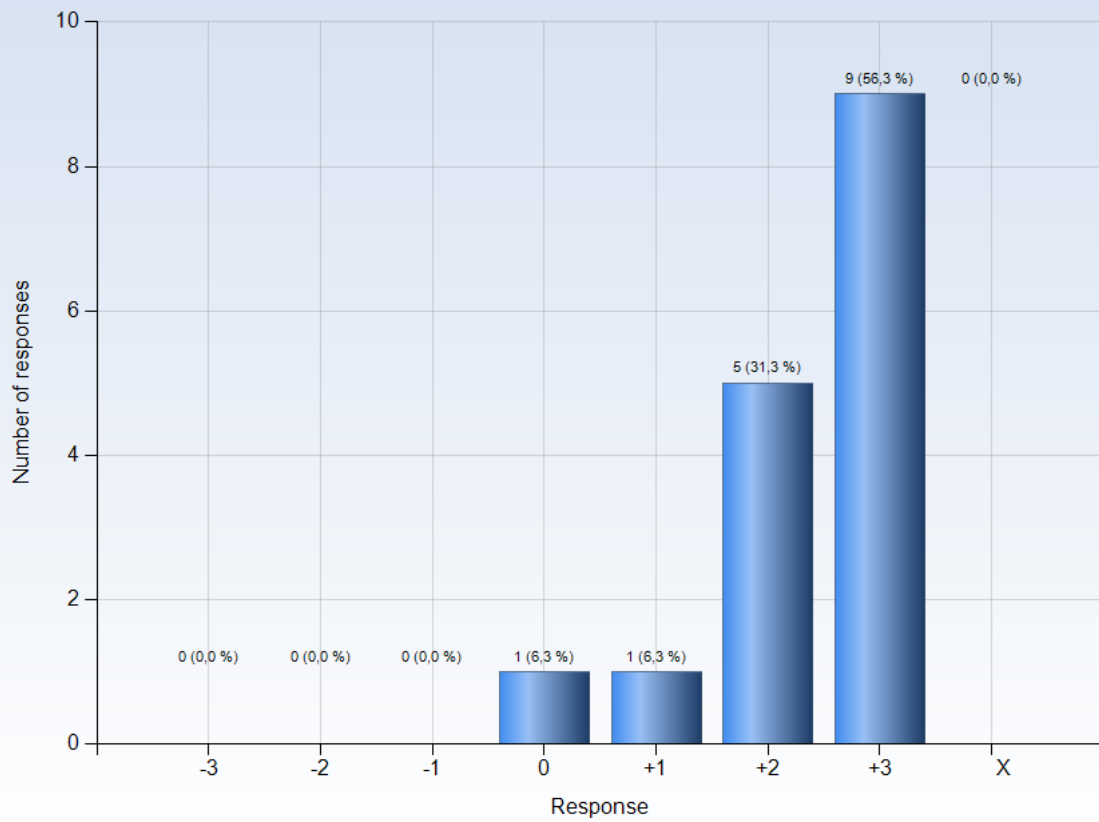
Comments

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



Comments

11. Understanding of key concepts had high priority

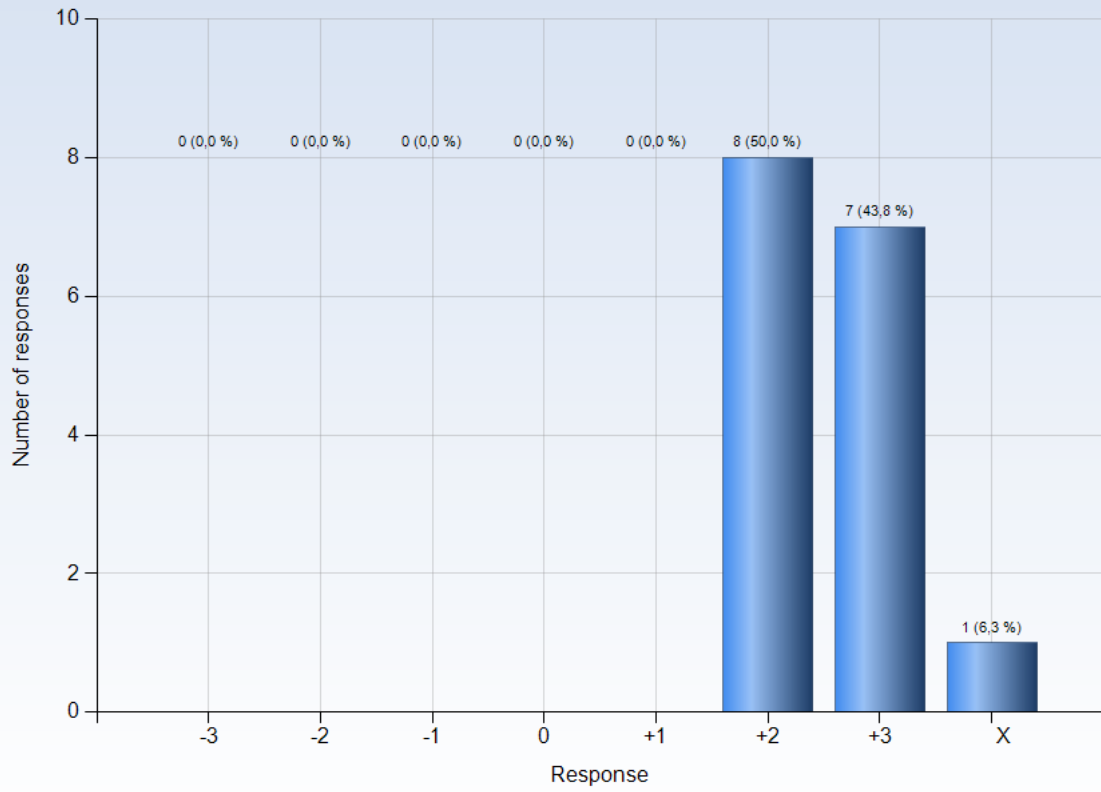


Comments

Comments (My response was: +3)

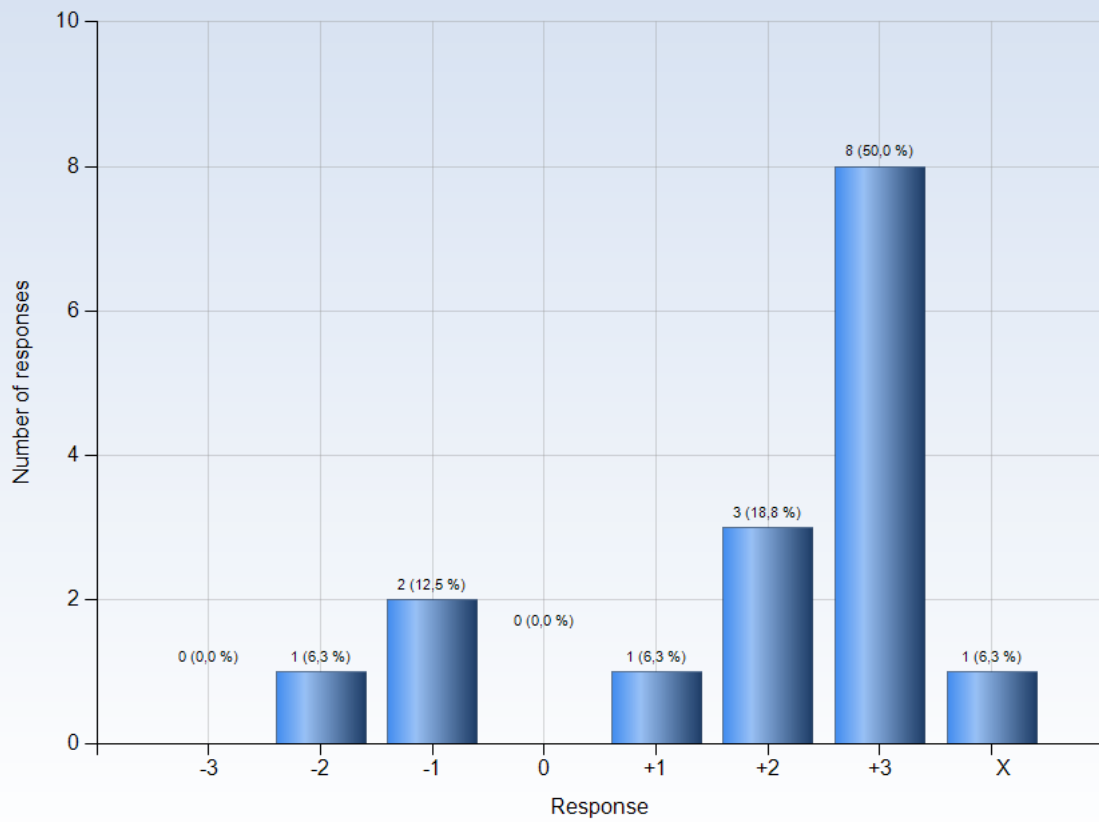
I really like the idea of questions on important topics during lectures

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



Comments

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

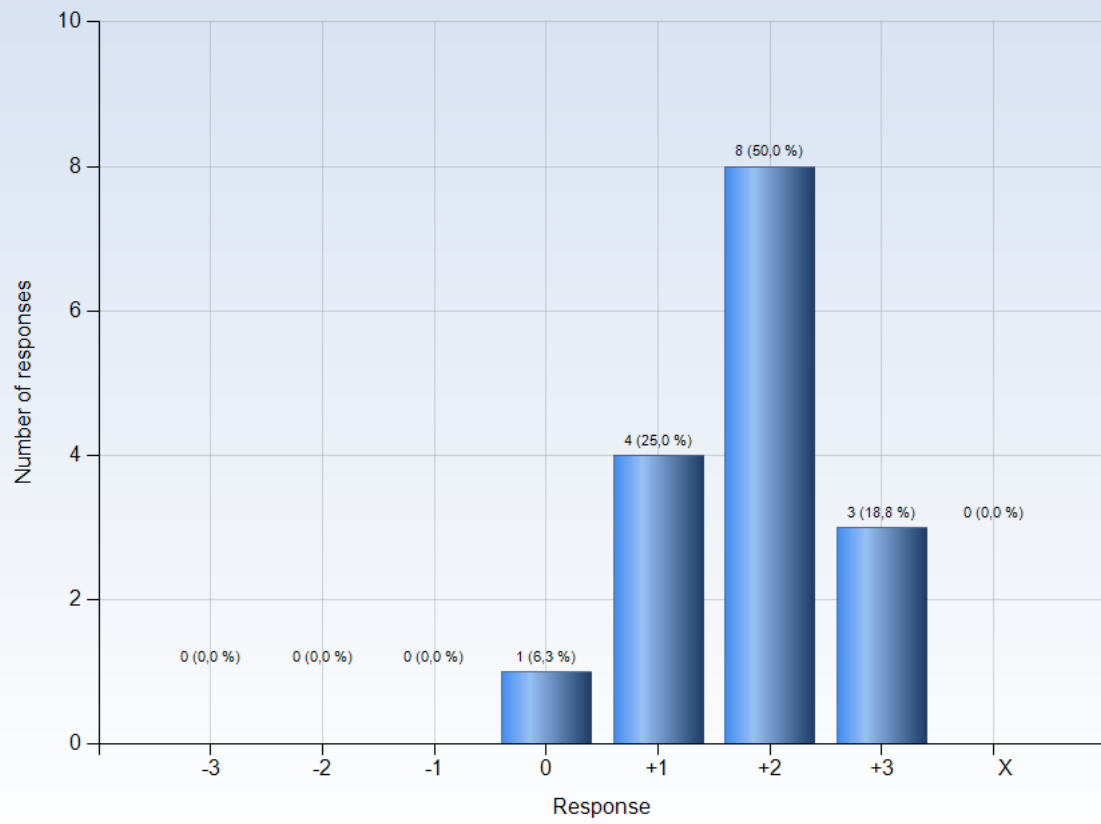


Comments

Comments (My response was: X)

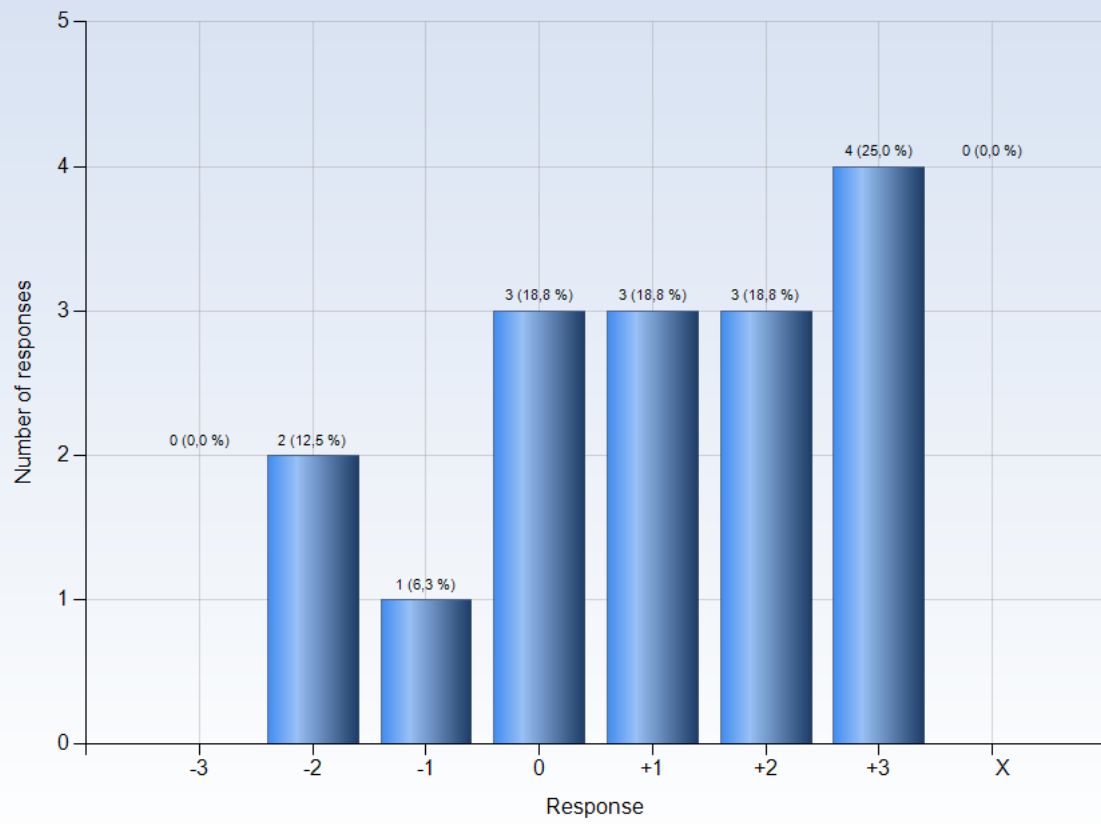
I don't know my grade yet

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



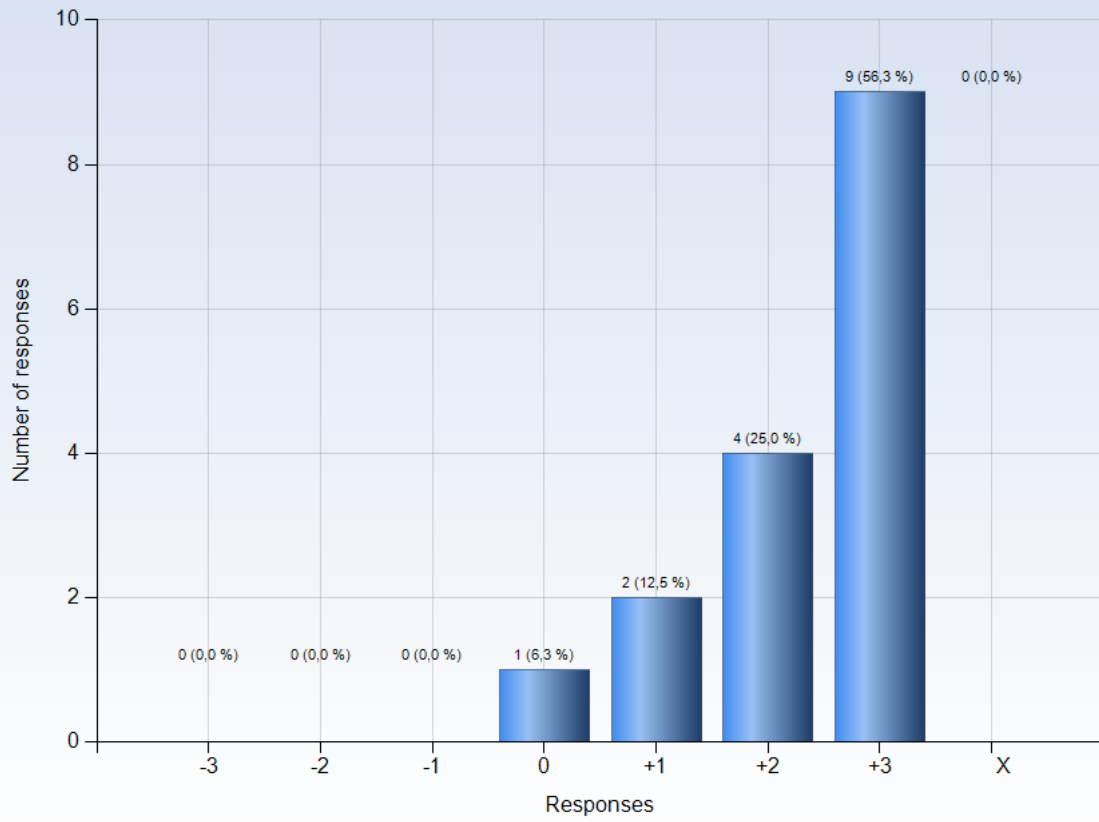
Comments

15. I could practice and receive feedback without being graded



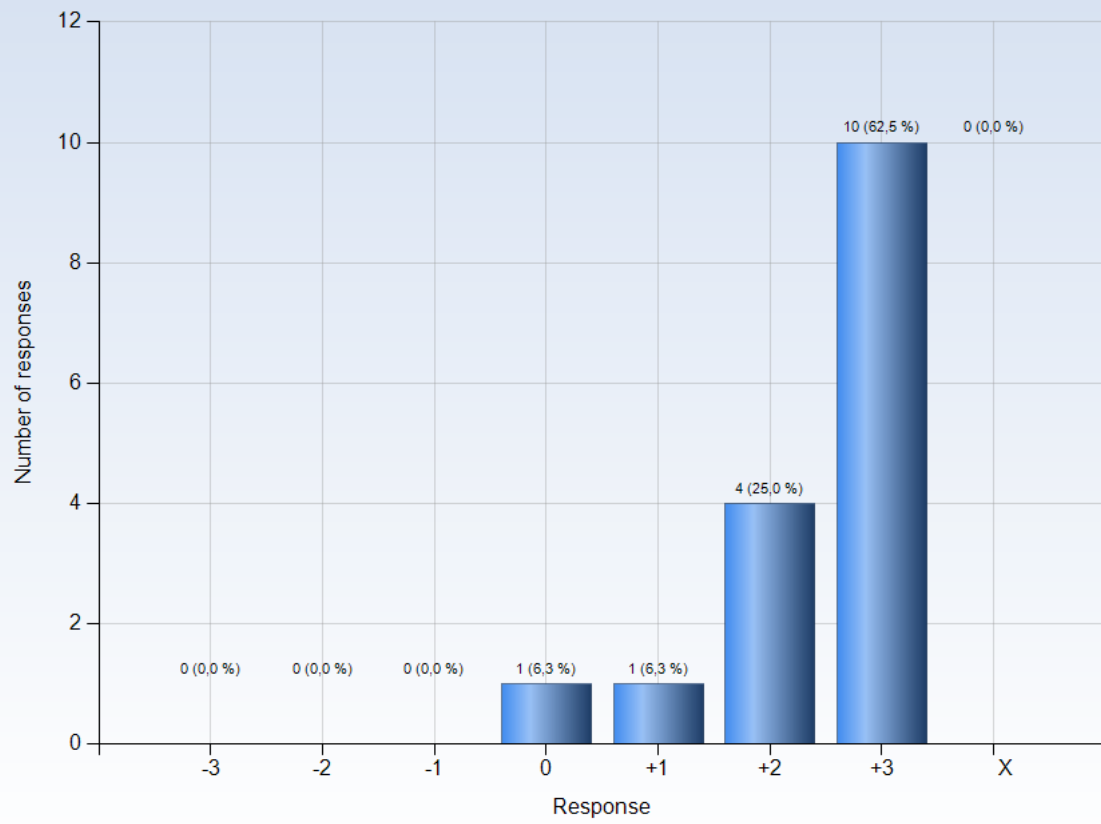
Comments

16. The assessment on the course was fair and honest



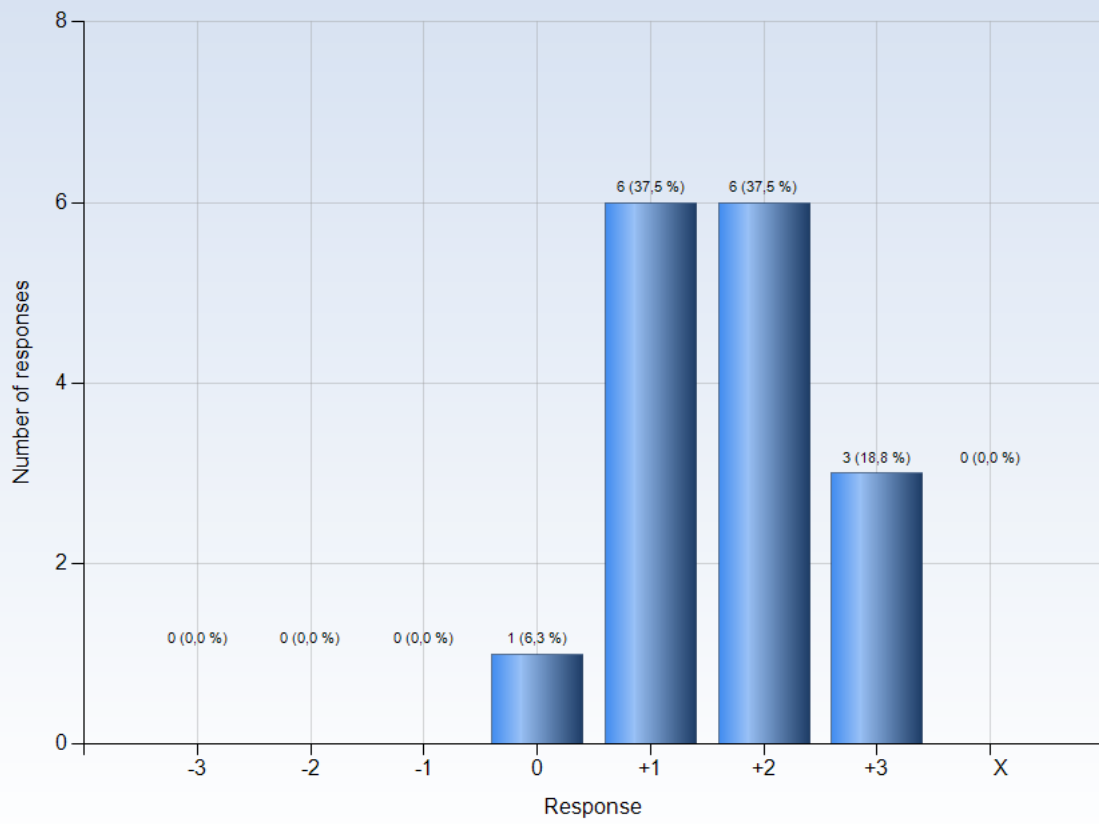
Comments

17. My background knowledge was sufficient to follow the course



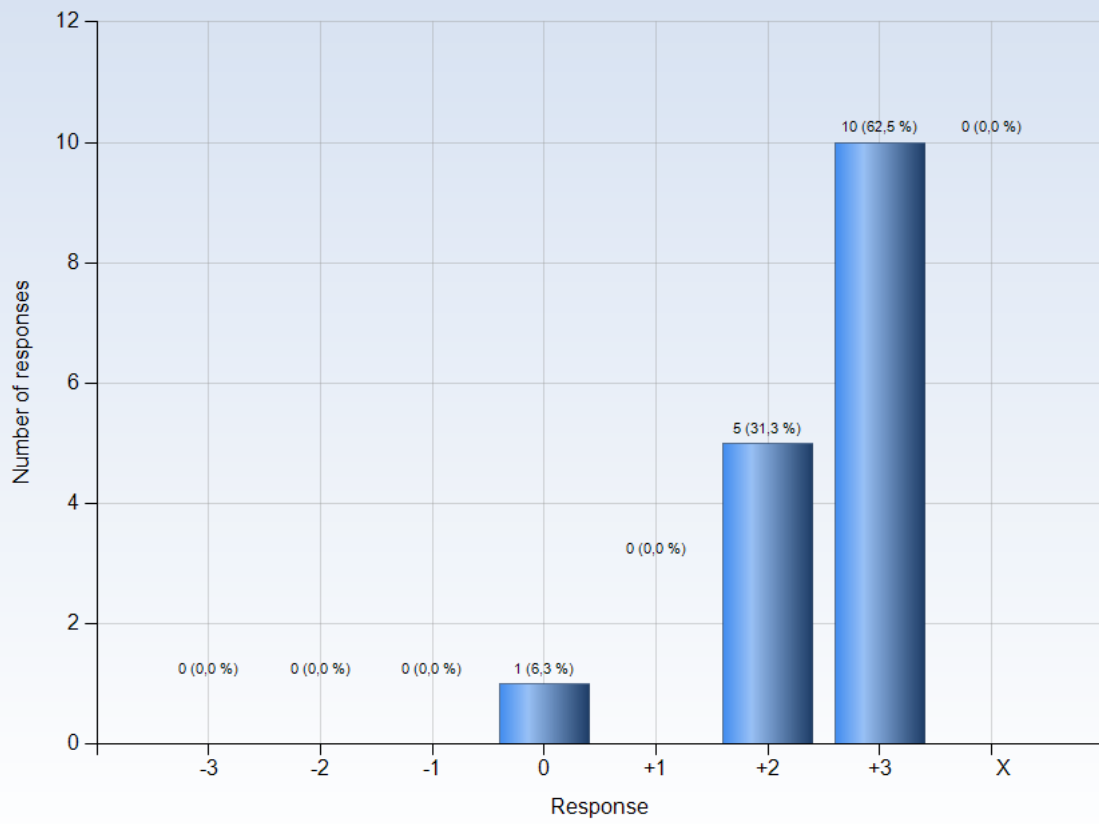
Comments

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



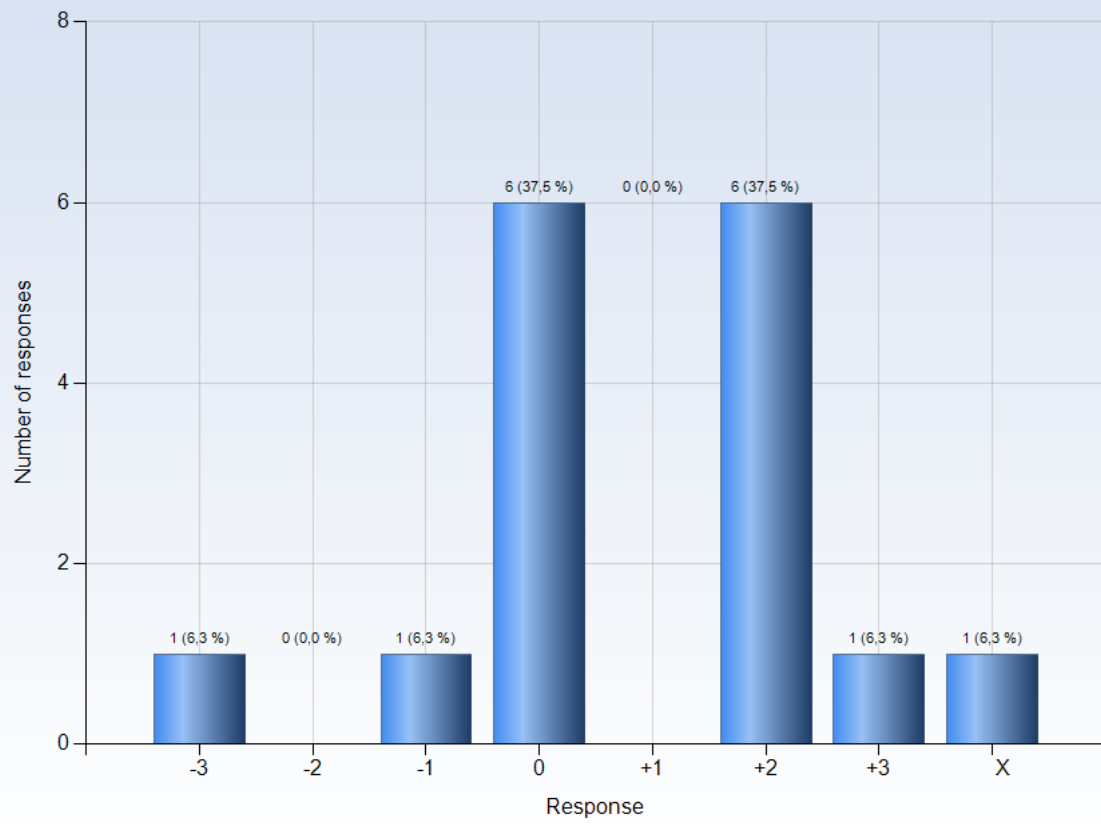
Comments

19. I was able to learn in a way that suited me



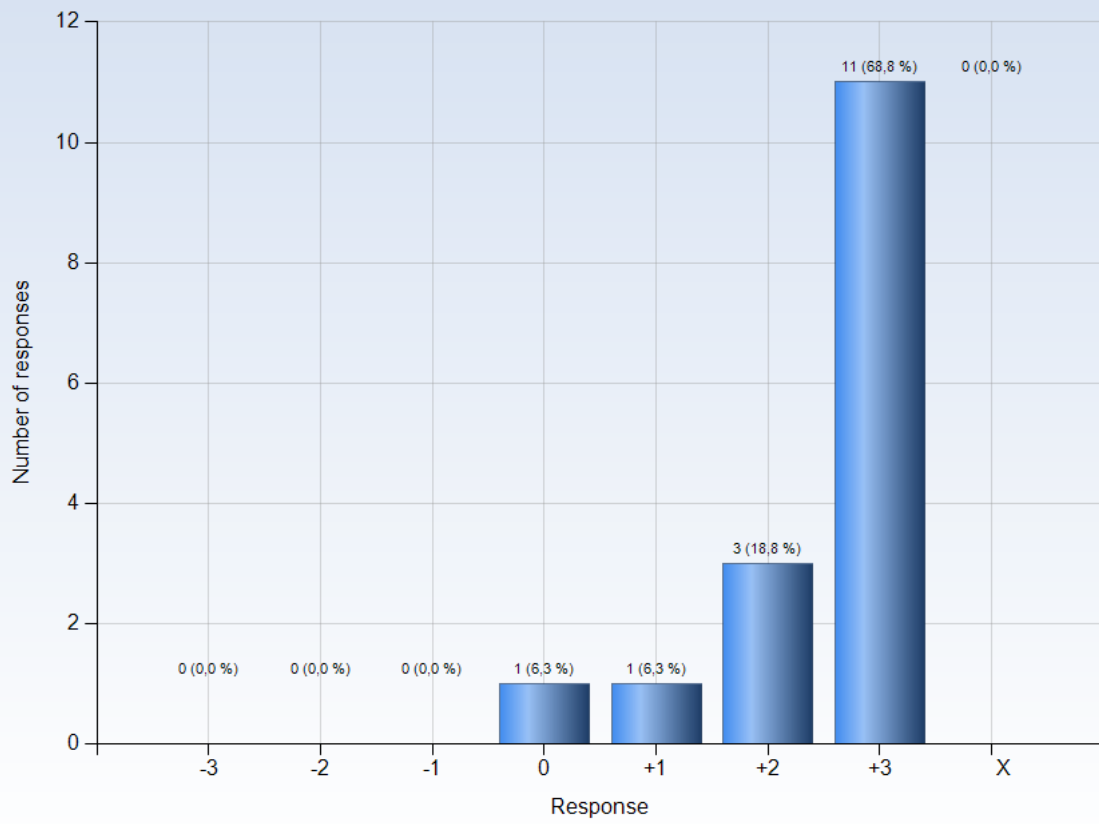
Comments

20. I had opportunities to choose what to do



Comments

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

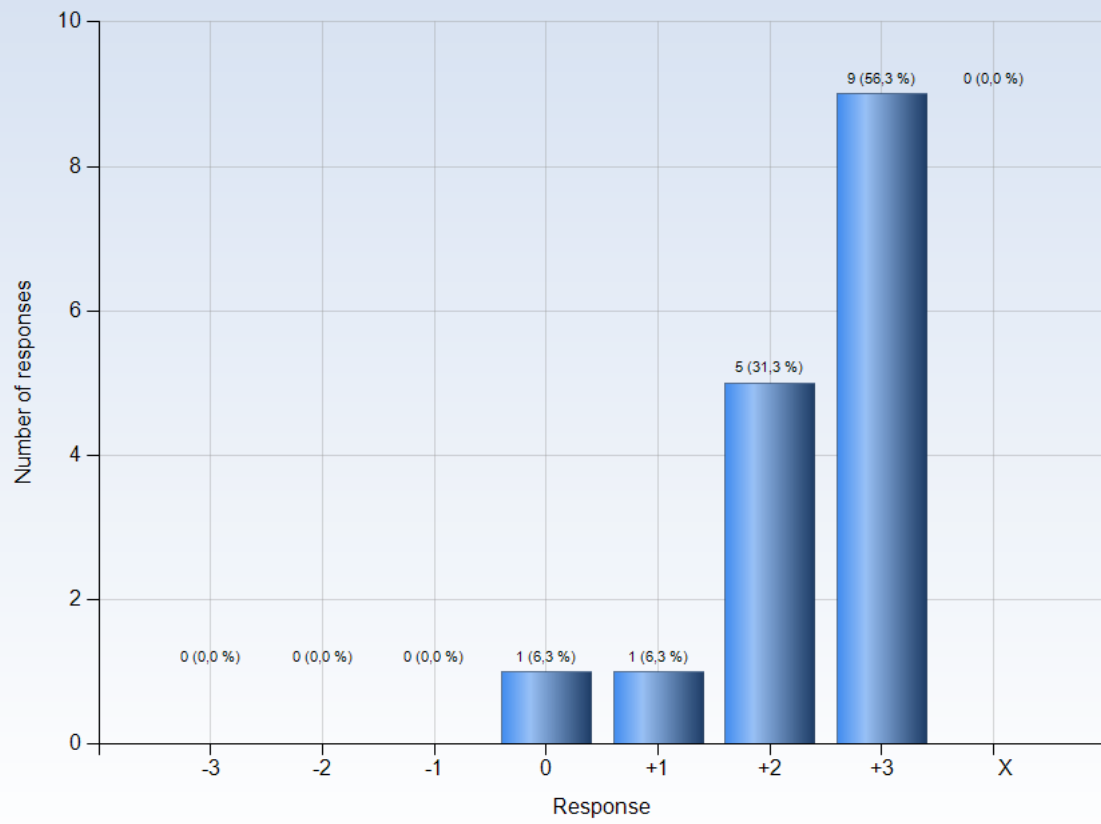


Comments

Comments (My response was: +3)

Mini group work +++

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



Comments