



Report - SF2812 - 2019-06-03

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):

Anders Forsgren, andersf@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 course covers linear and integer programming. The course is based on projects, where students get training in modeling and analysis of practical problems, in addition to lectures and tutorials, where students get understanding of theory and methods.

The project part of the course consisted of two project exercise in the form of modeling exercises, which were modeled in GAMS. Larger problems were successfully solved with the use of NEOS. The projects had parallel exercises, four each for exercises one and two. The group sizes were two or three persons and the groups were selected by me. The projects are presented at a particular lecture. This presentations lecture is devoted to discussion between students. First, students having worked on the same project sat together and discussed. As a second part of the lecture, students having worked on different projects sat together and discussed, three persons in each group. In addition, we have the "follow-up" discussions with the groups after the presentation lectures.

As earlier years I used laptop and project as support for the teaching. This gives a "skeleton" of the course material. The slides are written using LaTeX. By the laptop I could also illustrate some example problems by using GAMS and Matlab.

Axel Ringh was teaching assistant.

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?

Counting for ten weeks and 7.5 credits would give 20 hours per week. The students report a workload which is less, 12-14 hours a week would be the average. I think that the students think about the projects even when they do not work actively with them, so the workload is slightly higher. It is hard to draw conclusions with so few students responding.

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 on the exam were not quite up to the standards expected. First exam, in March, had 20 pass and 19 failed, out for 39. The second exam, in June, had 13 pass and 7 failed out of 20. This is similar to last year, and has been a trend over recent years.

The setup of the course is such that it suits students who want to take the course. I think this is valid for an advanced master course. It seems, however, that there is a group of students who are not that interested. The course being compulsory for some students is not something I prefer.



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?

The overall impression of the learning environment is good. This is in line with previous years.

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?

Collaboration and support get high marks. I think this is due to the setup of the projects and the way we give feedback. Some students are not happy with the way the project groups are set up, since they do not have freedom to choose their group mates. I understand their point of view, but think there is an overall benefit of doing it the way it is done.

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?

The students are in general happy with the course. It would be helpful for the new students to read the advice given.

PRIORITY COURSE DEVELOPMENT

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

New projects are always useful. For this year I had developed some basic exercises in Matlab Grader for the students to do prior to the course. These are focused on linear algebra.

OTHER INFORMATION

Is there anything else you would like to add?

I enjoy very much giving this course. In general, I think it works very well. Axel Ringh is a good teaching assistant.

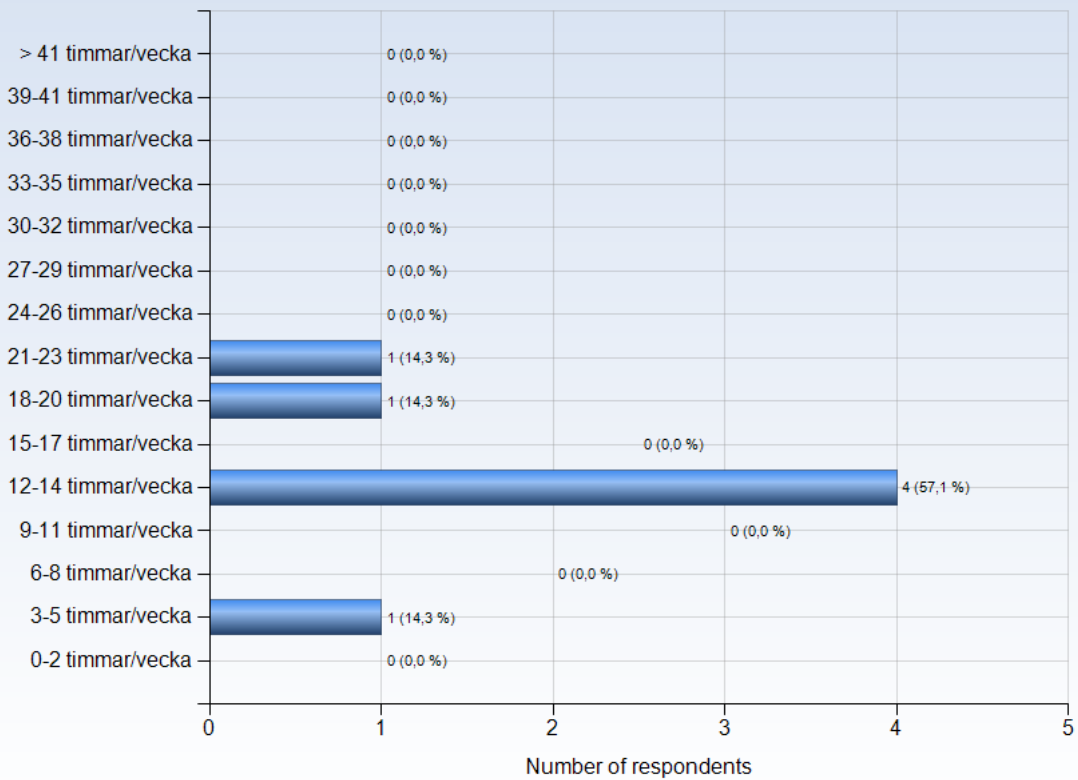


SF2812 - 2019-03-14

Antal respondenter: 52
Antal svar: 7
Svarsfrekvens: 13,46 %

ESTIMATED WORKLOAD

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



Comments

Comments (I worked: 12-14 timmar/vecka)

A good workload in the course. The second project was a bit time-pressured, however.
Programming needs more time than theoretical understanding.

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

The course has a good knowledge/workload ratio.

Comments (I worked: 21-23 timmar/vecka)

In the beginning I spent most of my time preparing for lectures and övningar. As the projects got introduced almost all of the time I had previously spent on preparing for classes went into those. I really enjoyed the projects, it's very interesting to take a written description and dissect it for relevant information needed to form the problem mathematically.



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:

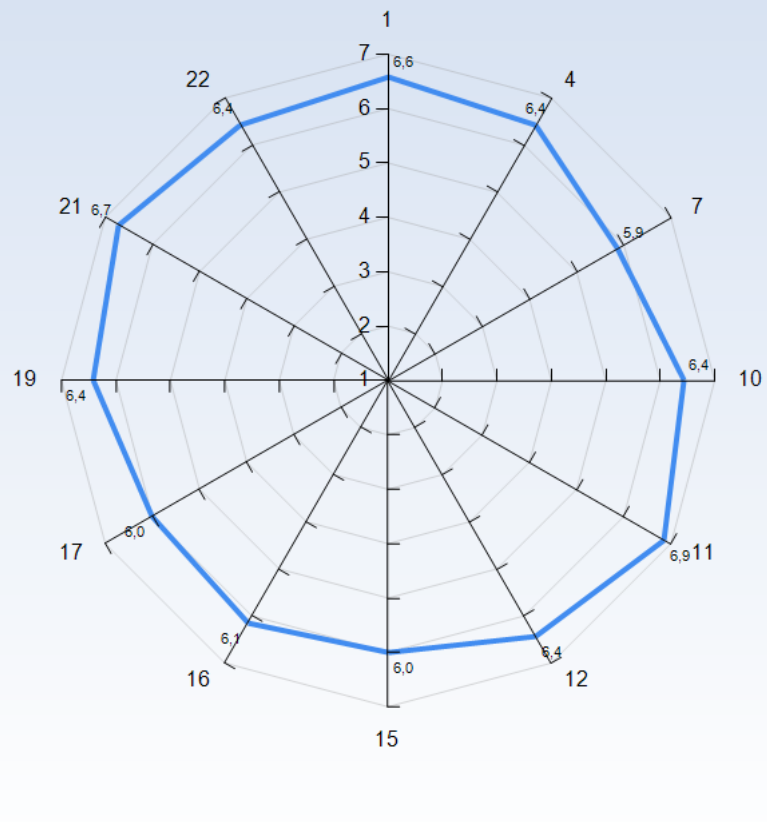
1 = No, I strongly disagree with the statement

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 v3.1.4

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.

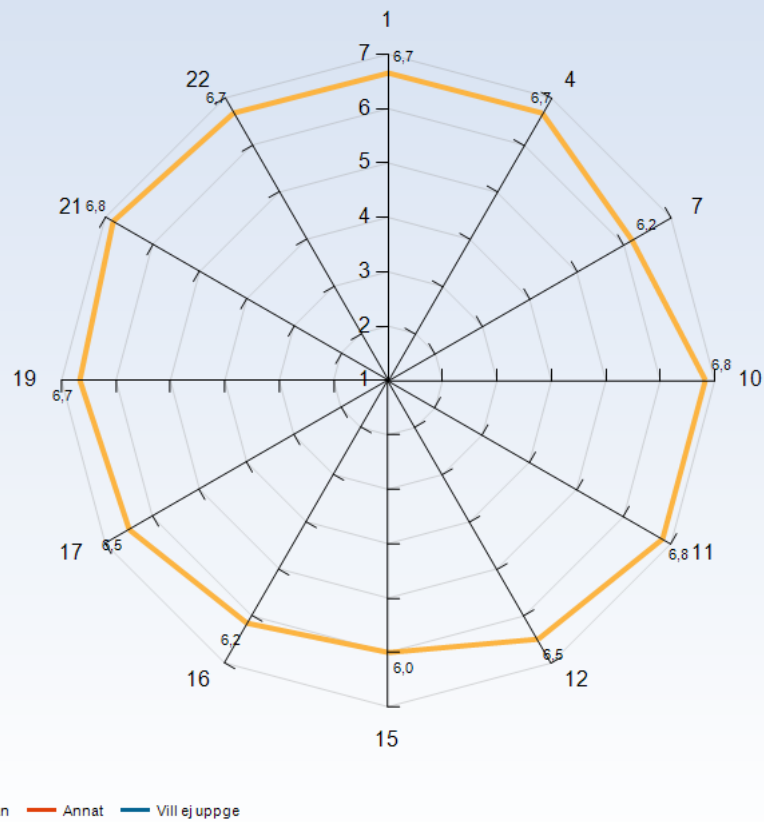
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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



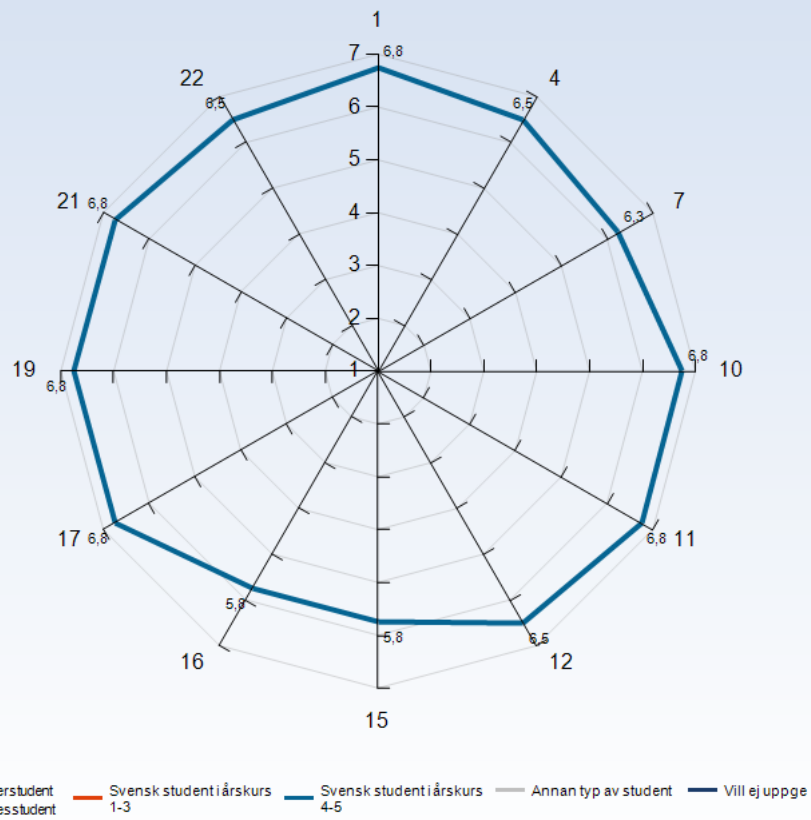
Comments

Comments (I am: Man)

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As a male, the curves in the course distracts me.

Average response to LEQ statements - per type of student



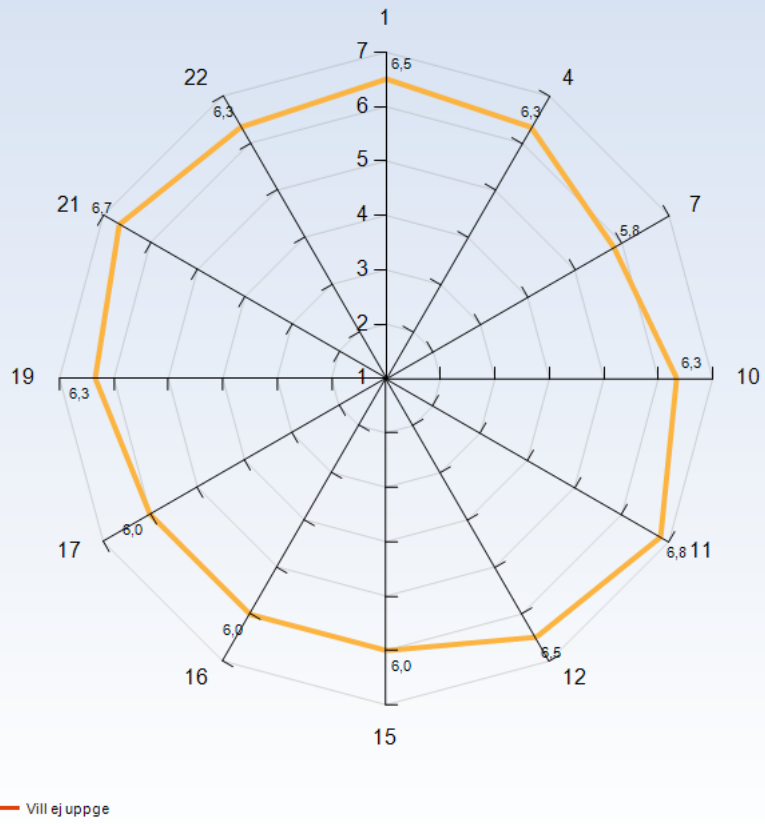
Comments

Comments (I am: Svensk student i årskurs 4-5)

I had all the relevant prerequisite knowledge.

As a master student, the course felt up to par (and better than many) to the courses I have read previously.

Average response to LEQ statements - per disability



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)

The projects were fun and felt like something you might actually get in a real work environment, although obviously simplified

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

The projects were the best aspect. But for me I personally learn much more from having examples that I can work on, so I can slowly build my area of knowledge.

The projects

The projects - gave really good insight to the applied part.

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

The course covers both modelling in a practical sense and the theory. The course is challenging but there are a lot of support, great exercises, lectures and amazing feedback for the projects.

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

Projects were very good and I really liked Axels approach in the övningar

What would you suggest to improve?

What would you suggest to improve? (I worked: 3-5 timmar/vecka)

I thought the examination was unfairly hard. I made some small mistakes on one of the questions which resulted in me getting ZERO points. I thought I deserved at least some points since it was clear that I had a decent understanding of what was asked.

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

I would have liked to have more exercises and maybe Homeworks for extra bonus points on the exam.

Keep exam connected to the applied focus more - perhaps a case.

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)

Go all in on the projects. The grading system favours good grades on the project SO much. You will be glad you went full juice come exam season.

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

Study in time because then the lectures and exercises will be the most rewarding, I did not, which made it harder, mainly because I had too little time (my own fault).

Enjoy yourself doing the projects

Planning is key, start with theory long before exam as it is not learned to a great degree from the projects.

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

Attend lectures and exercises. Make sure not to miss the GAMS introduction lecture. If you didn't take the basic optimisation course, make sure to invest a lot of time to learn the basics in the beginning of the course.

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

Start doing the theory questions right away!

Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 3-5 timmar/vecka)

Anders was a great lecturer. He manages to keep everything clear and on a good difficulty level. The slides were a bit hard to follow at times though.

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)

Great course! I am really impressed with the structure, the feedback sessions, and the general content. Well done!

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

Thanks for a great course!

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

A great course that takes you through the steps of translating real world descriptions into mathematical formulations which is something that is often lacking in certain math courses



SPECIFIC QUESTIONS

RESPONSE DATA

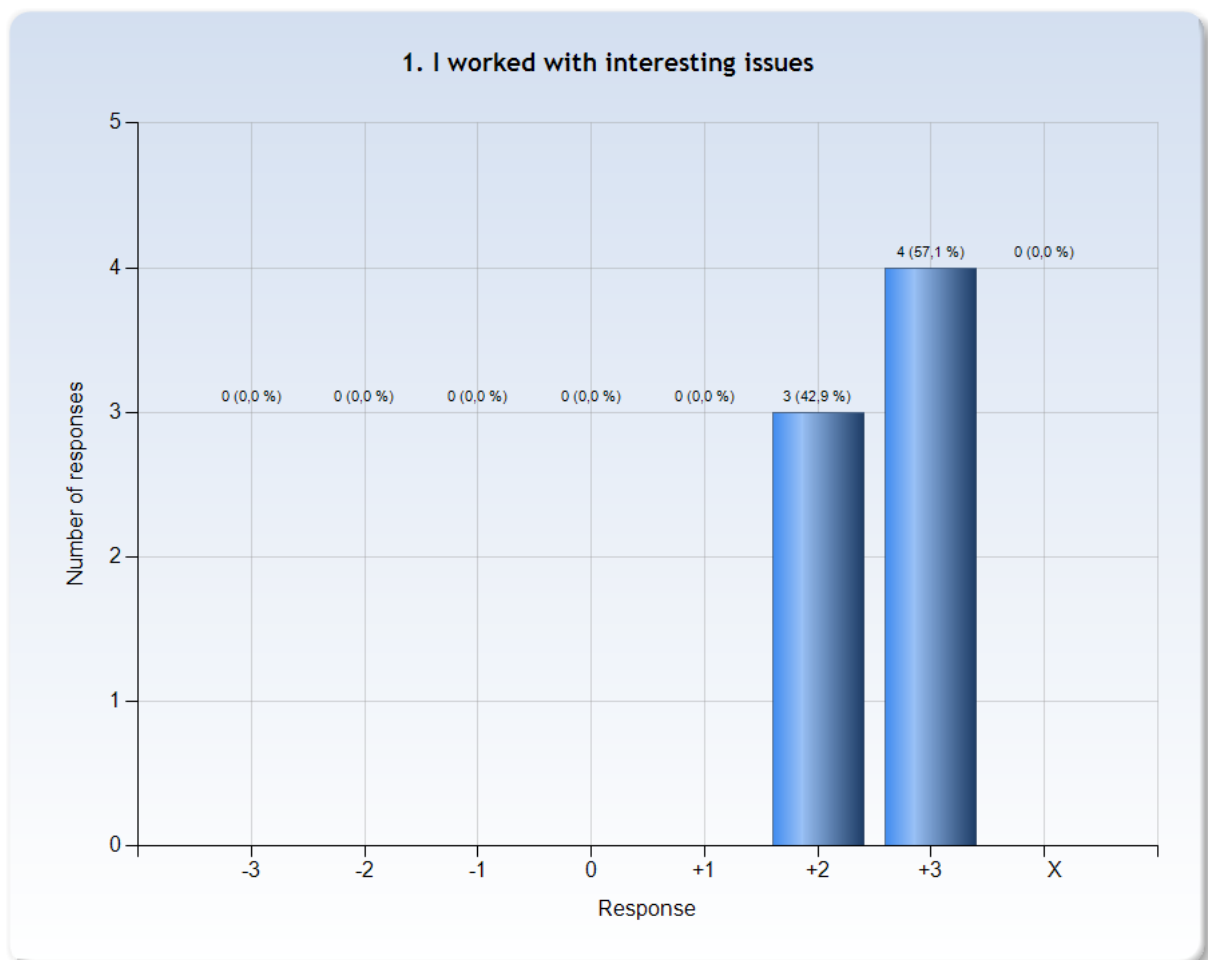
The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-3 = No, I strongly disagree with the statement

0 = I am neutral to the statement

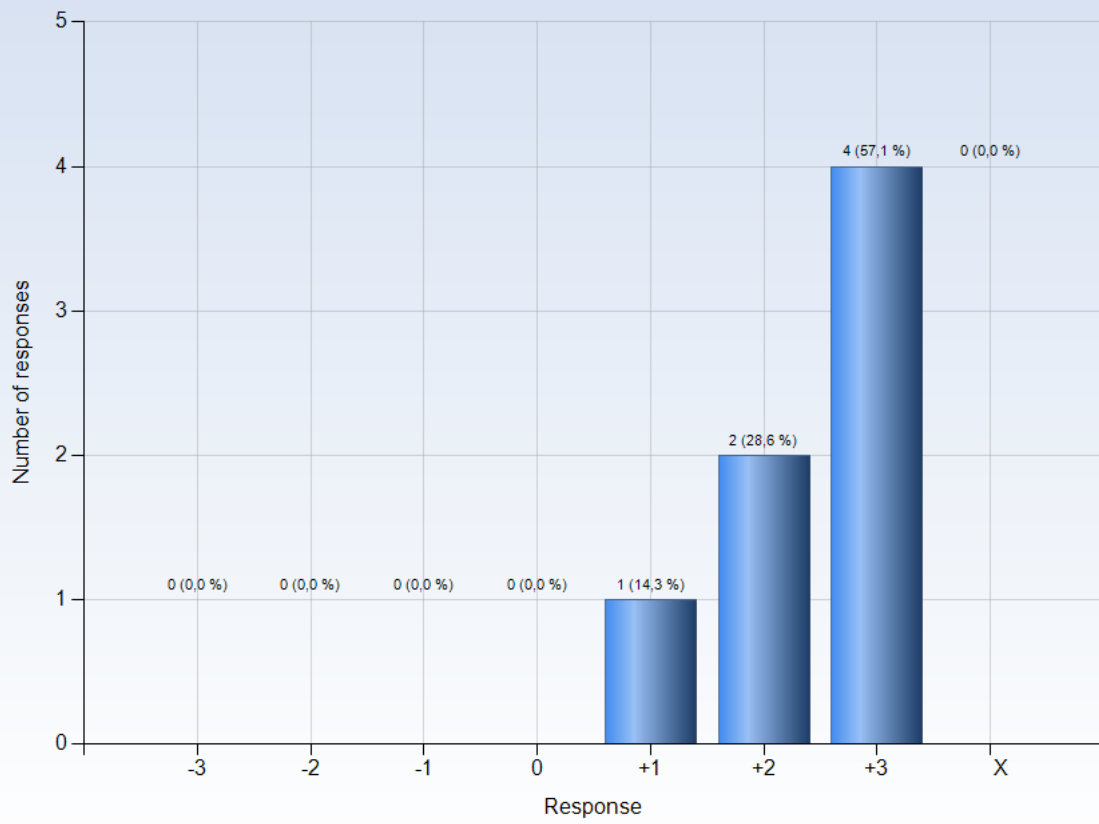
+3 = Yes, I strongly agree with the statement

X = I decline to take a position on the statement



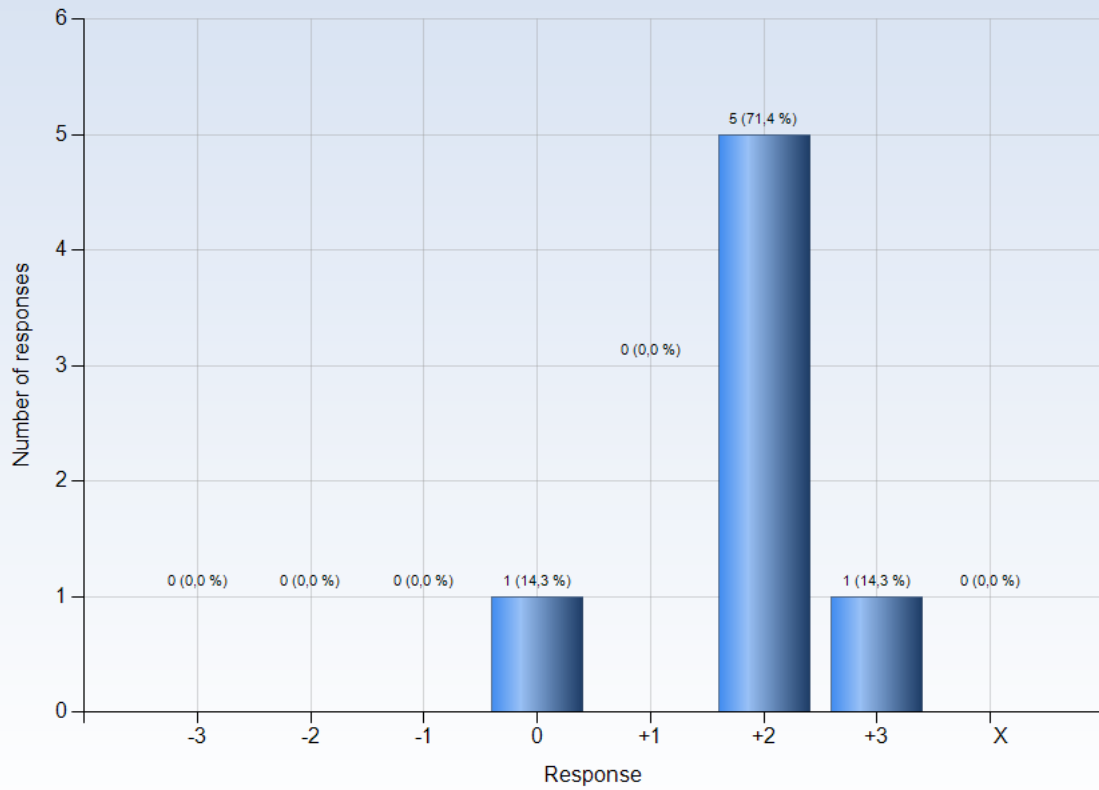
Comments

4. The course was challenging in a stimulating way



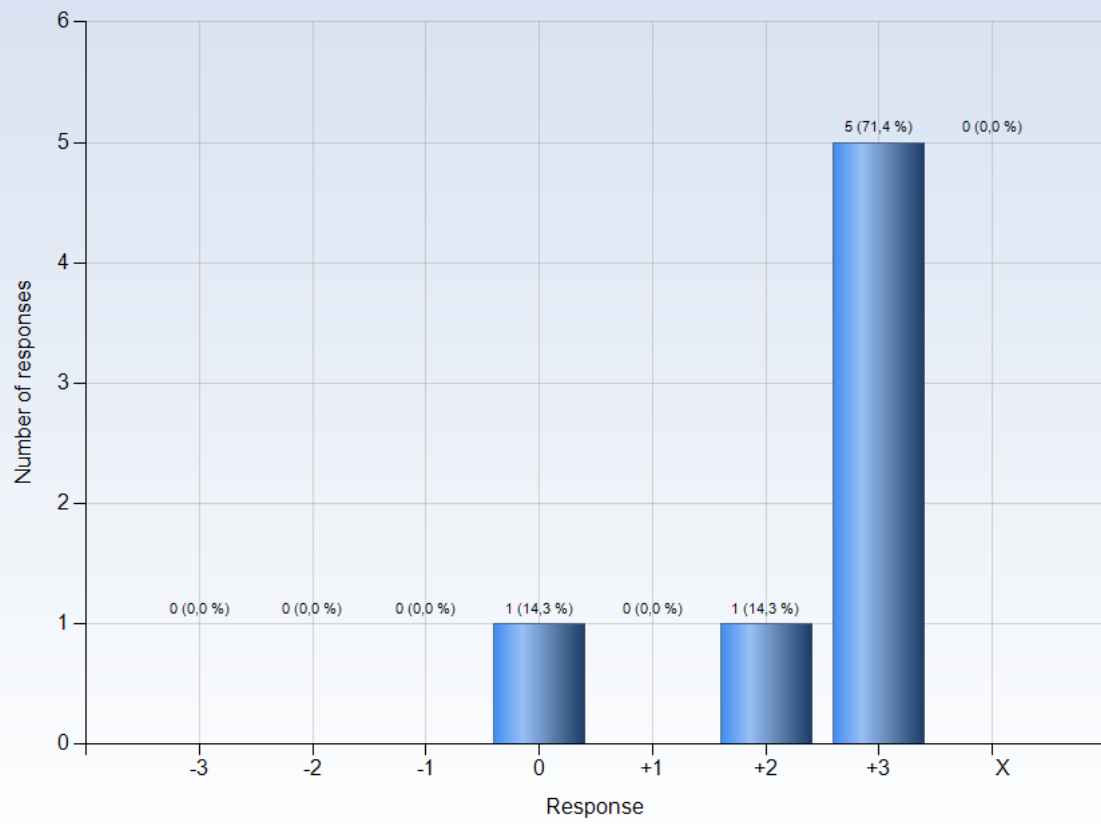
Comments

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



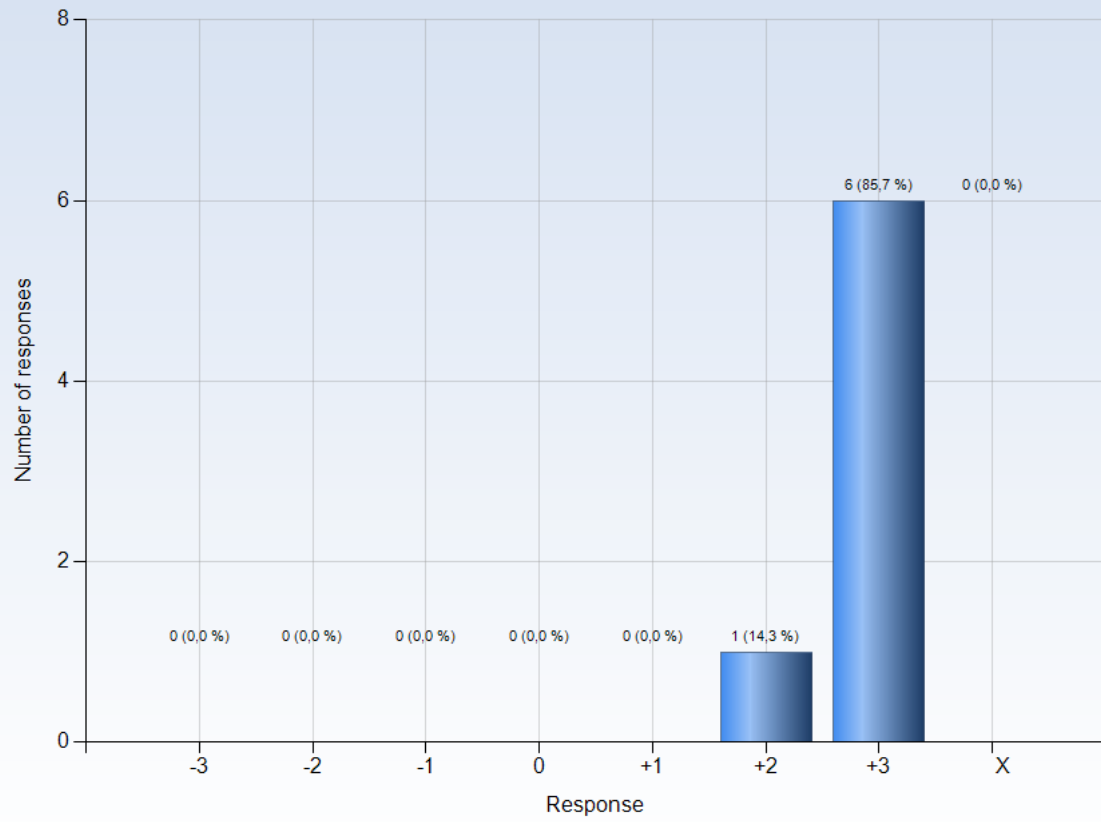
Comments

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



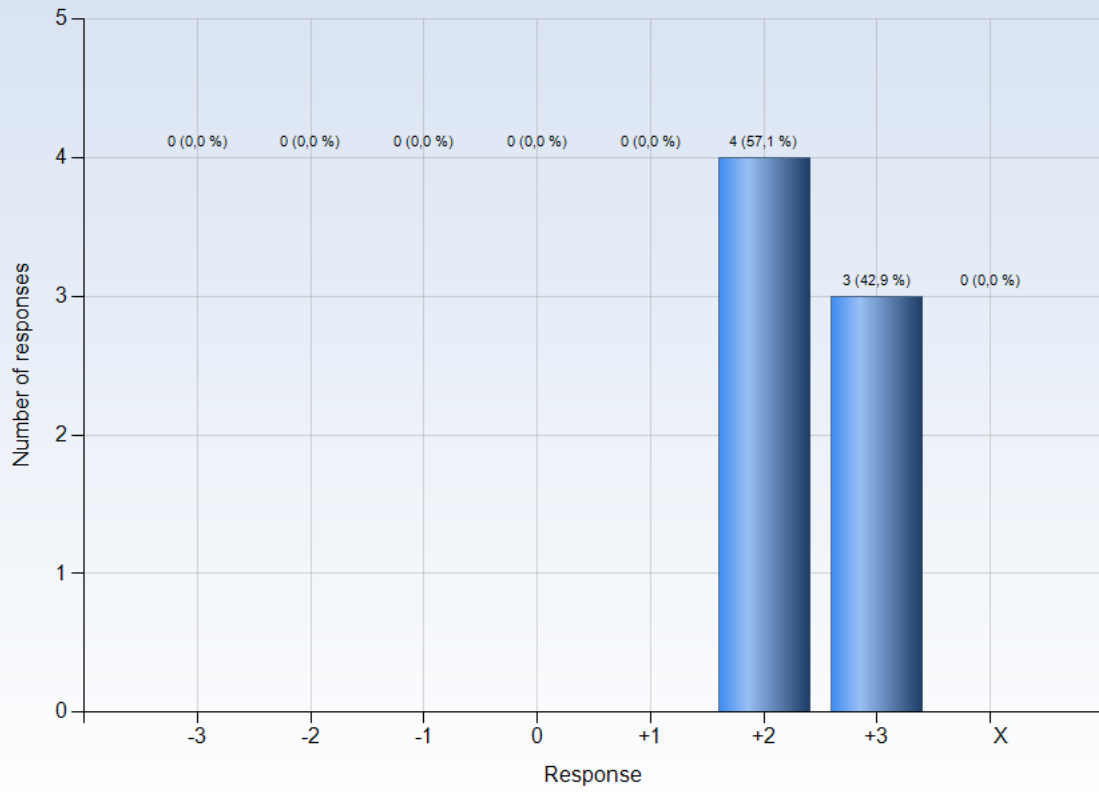
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11. Understanding of key concepts had high priority



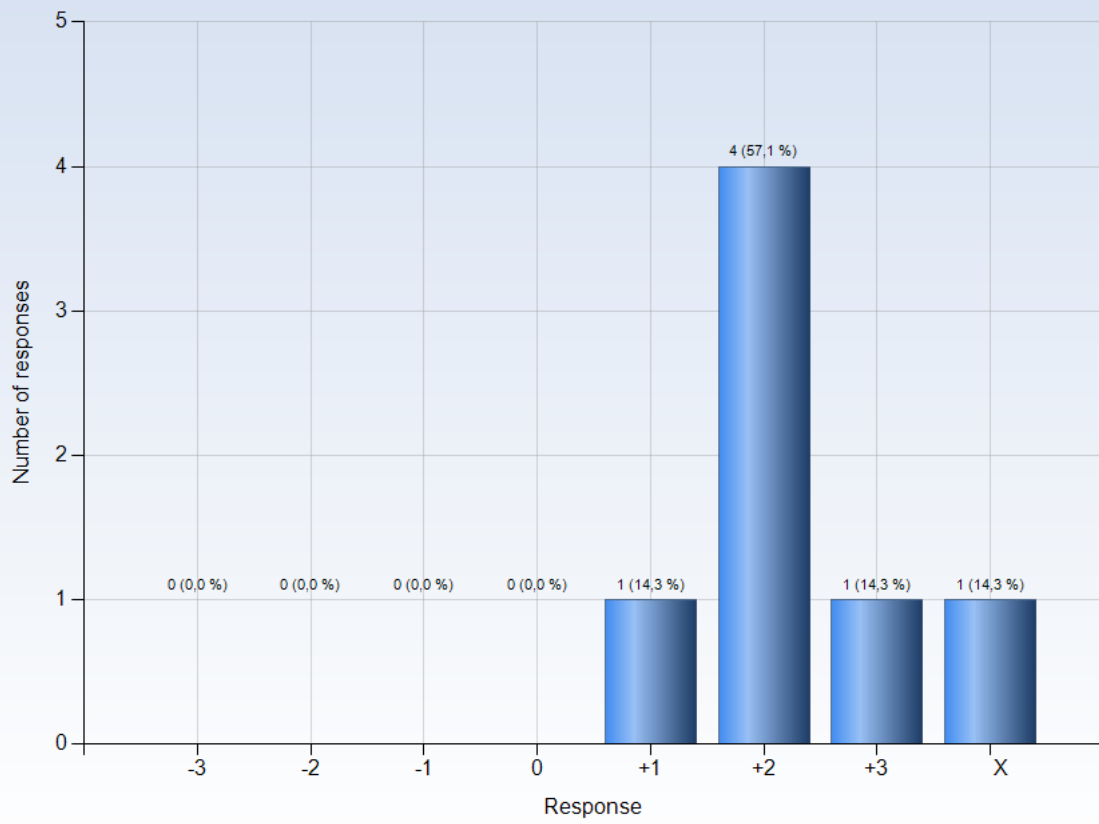
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12. The course activities helped me to achieve the intended learning outcomes efficiently



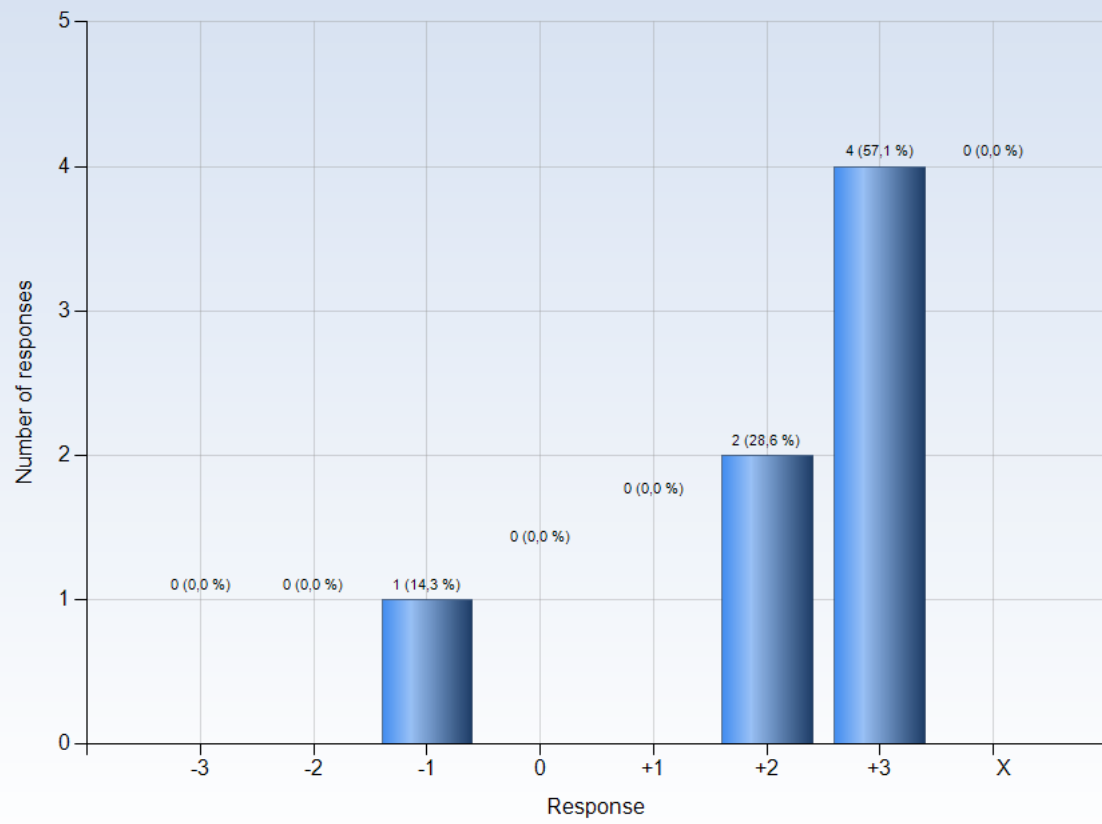
Comments

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



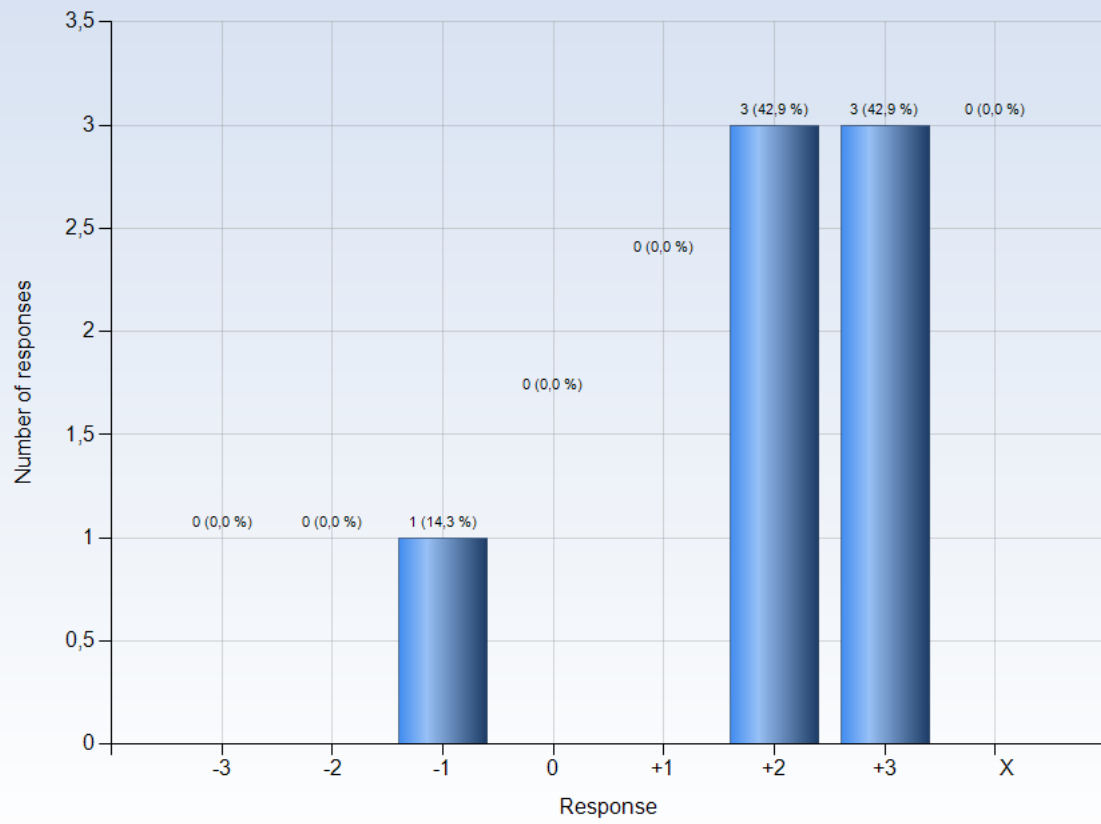
Comments

16. The assessment on the course was fair and honest



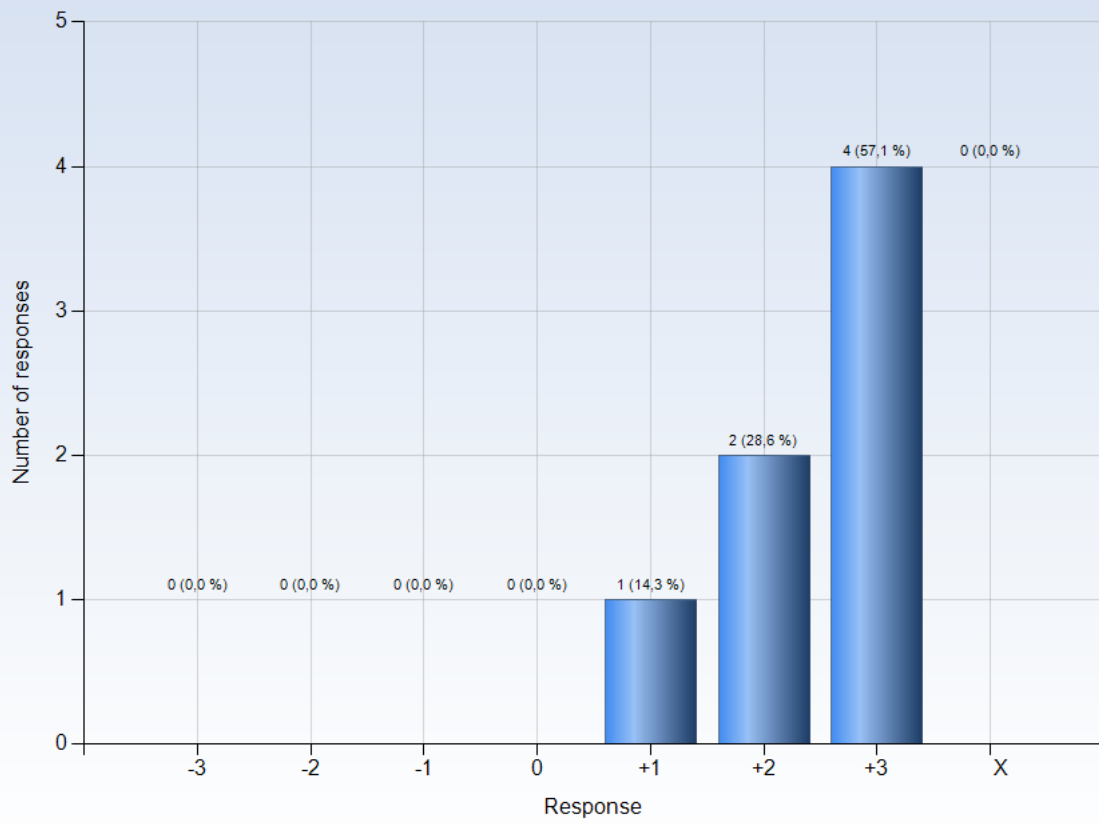
Comments

17. My background knowledge was sufficient to follow the course



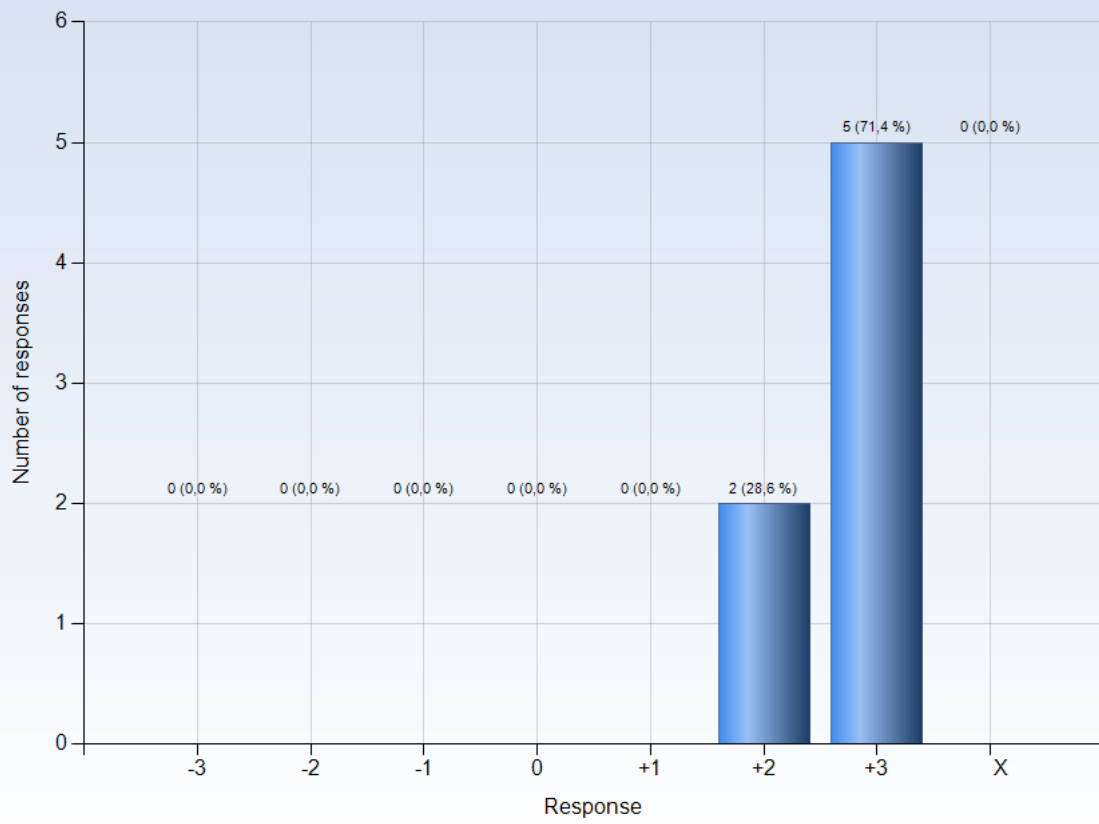
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19. The course activities enabled me to learn in different ways



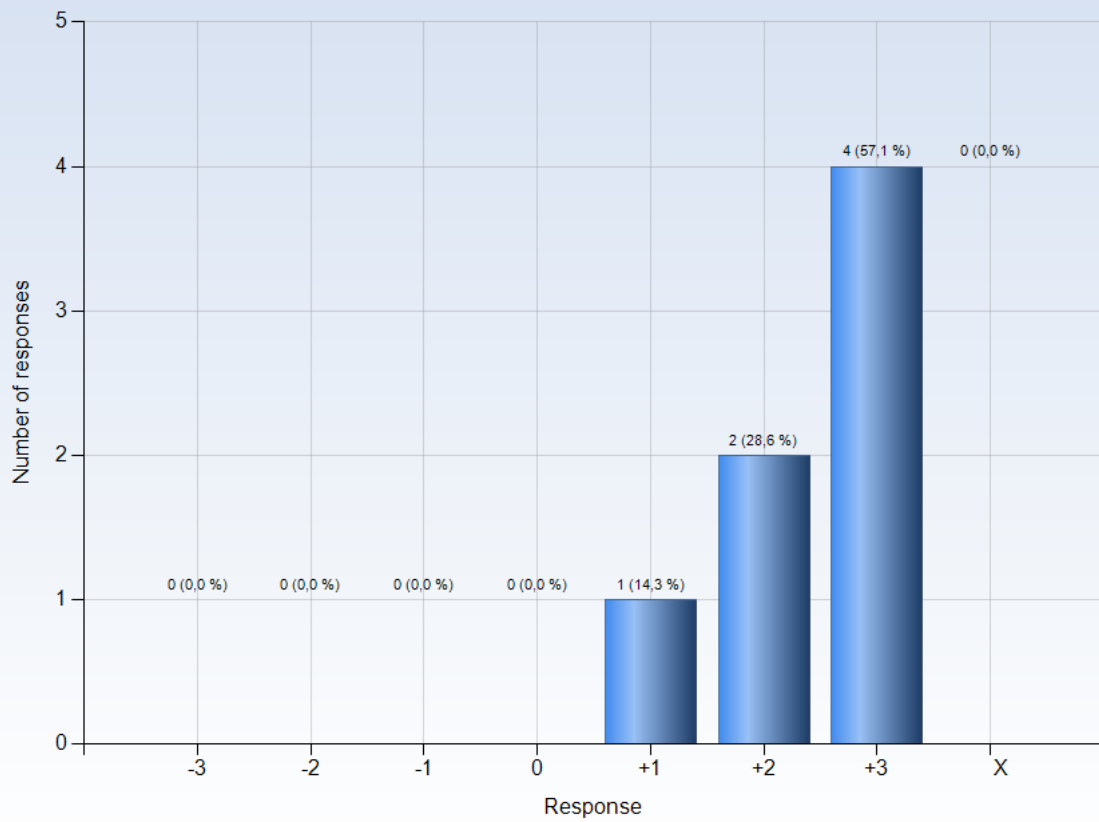
Comments

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



Comments

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



Comments

Comments (My response was: +3)

Never had a course before where the teachers were as approachable