Kursanalys - KTH[1]

Formulär för kursansvarig.
Kursanalysen utförs under kursens gång.
Nomenklatur: F – föreläsning, Ö – övning, R – räknestuga, L – laboration, S – seminarium)

KURSDATA Obligatorisk del [2]

Kursens namn	Kursnummer
Adaptive signal processing	EQ2400

Kurspoäng och poäng fördelat på exam-former	När kursen genomfördes
6	p3 VT17

Examination
• PRO1 - Projekt, 1,0 hp, betygsskala: P, F
• PRO2 - Projekt, 1,0 hp, betygsskala: P, F
• TENA - Skriftlig tentamen, 4,0 hp, betygsskala: A, B, C, D, E, FX, F

Kursansvarig och övriga lärare	Undervisningstimmar, fördelat på F, Ö, R, L, S
Magnus Jansson (responsible, lecturer)	F24
Arash Owrang (Teaching assistant)	Ö14

Antal registrerade studenter	24
Prestationsgrad efter 1:a examenstillfället, i %	87.5%
Examinationsgrad efter 1:a examenstillfället, i %	83.3%

MÅL

Ange övergripande målen för kursen

See course plan

Ange hur kursen är utformad för att uppfylla målen

12 lectures to give an overview of the theory. 7 problem solving sessions led by a TA to illustrate problem solving techniques. This is fewer sessions than in most other courses with the motivation to give more time to students' own practicing of problem solving outside class. Computer exercise material is provided (but not scheduled in class) to practice computer based problem solving and to illustrate theory. The examination consists of two projects where semipractical problems should be solved by computer based tools and reported by computer code, demo, and oral presentation in groups of two students. The projects also serve the purpose of getting students active during the course. Written exam in the end. The last couple of years we also added weekly voluntary homework assignments on problem solving. Again, with the purpose of promoting students' active continuous learning.

---

[1] Instruktioner till kursanalysformulär sist i dokumentet
[2] Rektors beslut: http://www.kth.se/info/kth-handboken/II/12/1.html

Eventuellt deltagande i länkmöte före kursstart
Synpunkter från detta

Kursens pedagogiska utveckling I
Beskriv de förändringar som gjorts sedan förra kursomgången. (Berätta även för studenterna vid kursstart)

New project assignment material. We continued using the voluntary weekly homework problems giving bonus points to the exam. Since we have few tutorials we want to stimulate students to start doing problem solving on their own during the entire course period.

Kontakt med studenterna under kursens gång

Studenter i årets kurs-nämnd:	Namn	E-post (lämnas blank vid webbpublicering)
	We have no particular meetings with students except in class and via homepage and email.	

Resultat av formativ mittkursenkät	Only contact with students in class and using KTH web/email.
Resultat av kursmöten	

Kontakt med övriga lärare under kursens gång
Kommentarer

Informal meetings between course responsible and TA.

Kursenkät; teknologernas synpunkter Obligatorisk del [3]

Att komma ihåg:
1) Uppmana, mha kursnämnden, till ifyllande av kursenkät i anslutning till / just efter slutexaminationen
2) Delge kursnämnden enkäten
3) Publicera enkäten under en kortare tid

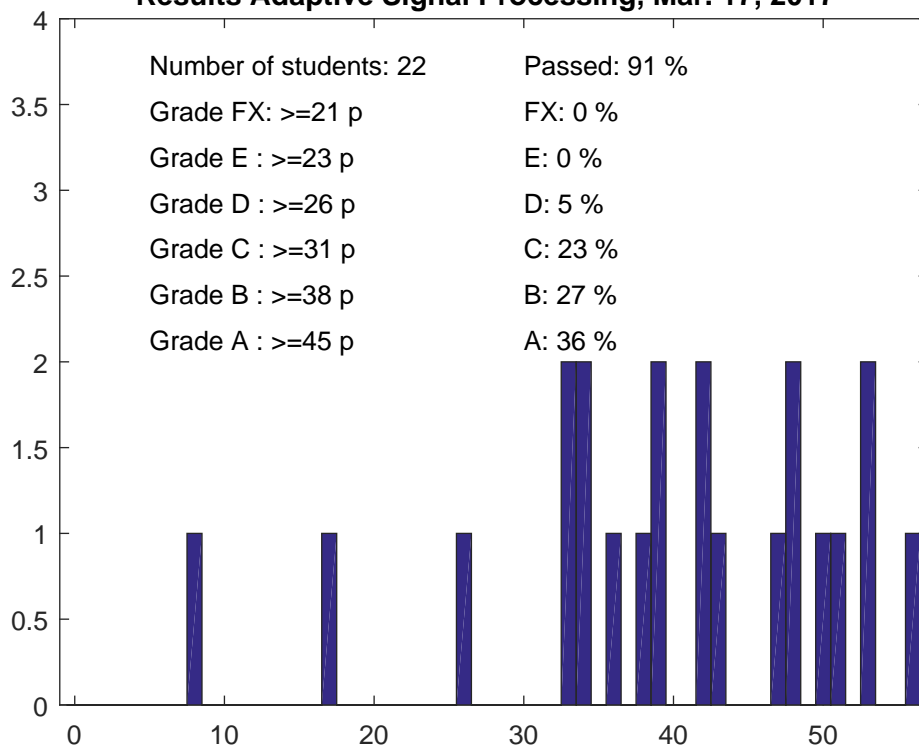| Period, då enkäten var aktiv	20/03/2017 - 03/04/2017
Frågor, som adderades till standardfrågorna	We used the LEQ standard questionnaire.
Svarsfrekvens	67% (16 out 24 active students)
Förändringar sedan förra genomförandet	no major changes in the course
Helhetsintryck	In general very positive responses
Relevanta webb-länkar	Course homepage: https://www.kth.se/social/course/EQ2400/ and https://kth.instructure.com/courses/1129

Kursansvarigs tolkning av enkät

Positiva synpunkter	It appears the students liked most of the course. See scores and comments in the evaluation. Homework nd project assignments are very much appreciated.
Negativa synpunkter	No strong negative feedback but minor suggestions for improvements. More diverse proejcts, more interaction in tutorials and lectures.
Var kursen relevant i förhållande till kursmålen?	Yes
Syn på förkunskaperna	Adequate

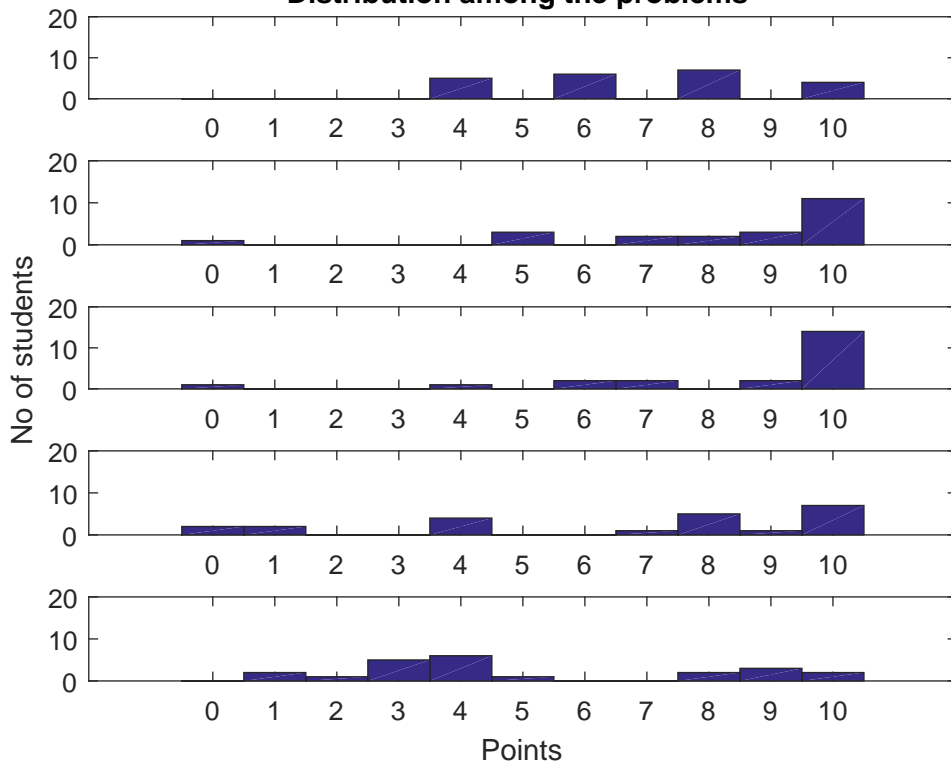[3] Rektors beslut: http://www.kth.se/info/kth-handboken/II/12/1.html

Syn på undervisningsformen	Mostly good. More interactive tutorials are asked for. As mentioned above, so far we have kept the TA led problem solving on the board style since we have the weekly homework assignments.
Syn på kurslitt/kursmaterial	No real mentioning
Syn på examinationen	Projects are considered very useful. Examination is honest, fair and relevant.
Speciellt intressanta kommentarer	

Synpunkter från övriga lärare efter avslutad kurs

Vad fungerade bra	
Vad fungerade mindre bra	

Resultat av kursnämndsmöte efter examination

Studenternas sammanfattn.	
Förslag till förändringar	
Länk till kursnämndsprot.	

Kursansvarigs sammanfattande berättelse

Helhetsintryck	See comments under the course evaluation
Positiva synpunkter	
Negativa synpunkter	
Syn på förkunskaperna	
Syn på undervisningsformen	
Syn på kurslitt/kursmaterial	
Syn på examinationen	

Kursens pedagogiska utveckling II Obligatorisk del [4]

Hur förändringarna till denna kursomgång fungerade	The voluntary homeworks still seem to work well. Actually more students did them than before (maybe because it was mentioned in the beginning as one recommendation from last year students). We also continued using oral slide style presentation/examination of projects. This works really well and gives good interaction with students.
Förändringar som bör göras inför nästa kursomgång	More activation of students in class. Clickers? Update computer exercise material if time permits. Try to make projects more diverse.

Övrigt

Kommentarer

---

[4] Rektors beslut: http://www.kth.se/info/kth-handboken/II/12/1.html

Results Adaptive Signal Processing, Mar. 17, 2017

Number of students: 22   Passed: 91 %

Grade FX: >=21 p   FX: 0 %

Grade E : >=23 p   E: 0 %

Grade D : >=26 p   D: 5 %

Grade C : >=31 p   C: 23 %

Grade B : >=38 p   B: 27 %

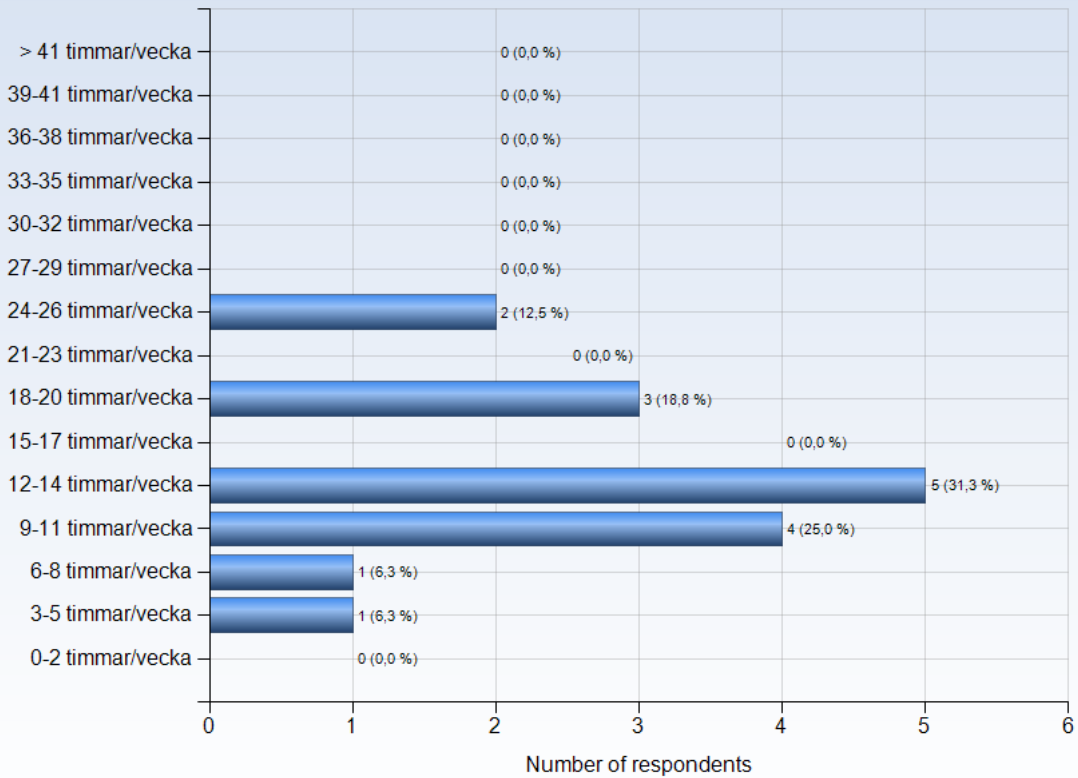Grade A : >=45 p   A: 36 %

Distribution among the problems

EQ2400 - 2017-03-17

Antal respondenter: 24
Antal svar: 16
Svarsfrekvens: 66,67 %

ESTIMATED WORKLOAD

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

Hours/week	Respondents
> 41 timmar/vecka	0 (0,0 %)
39-41 timmar/vecka	0 (0,0 %)
36-38 timmar/vecka	0 (0,0 %)
33-35 timmar/vecka	0 (0,0 %)
30-32 timmar/vecka	0 (0,0 %)
27-29 timmar/vecka	0 (0,0 %)
24-26 timmar/vecka	2 (12,5 %)
21-23 timmar/vecka	0 (0,0 %)
18-20 timmar/vecka	3 (18,8 %)
15-17 timmar/vecka	0 (0,0 %)
12-14 timmar/vecka	5 (31,3 %)
9-11 timmar/vecka	4 (25,0 %)
6-8 timmar/vecka	1 (6,3 %)
3-5 timmar/vecka	1 (6,3 %)
0-2 timmar/vecka	0 (0,0 %)

Number of respondents

Comments

Comments (I worked: 3-5 timmar/vecka)
Good course in terms of understanding adaptive signal processing.

Comments (I worked: 12-14 timmar/vecka)
Work on the optional assignments and on the projects

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
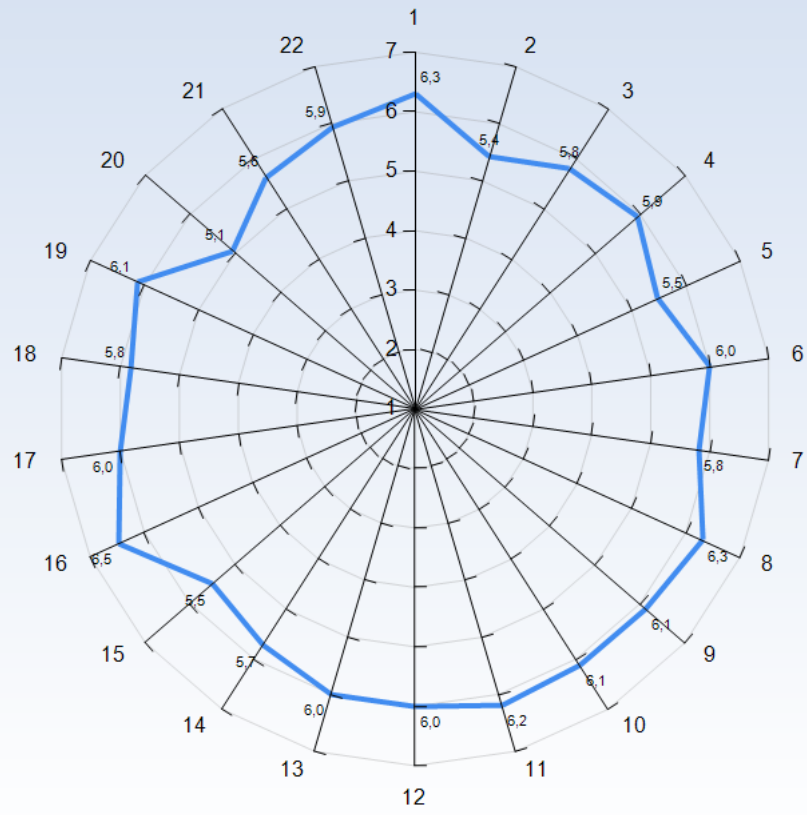
KTH Learning Experience Questionnaire v3.1.3

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
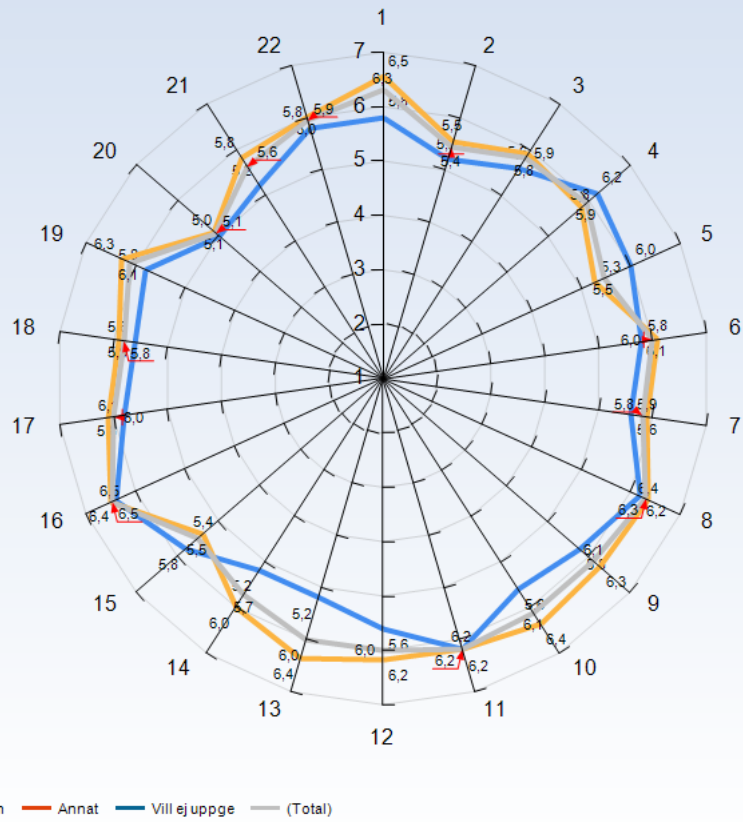
Comments

Average response to LEQ statements - per type of student
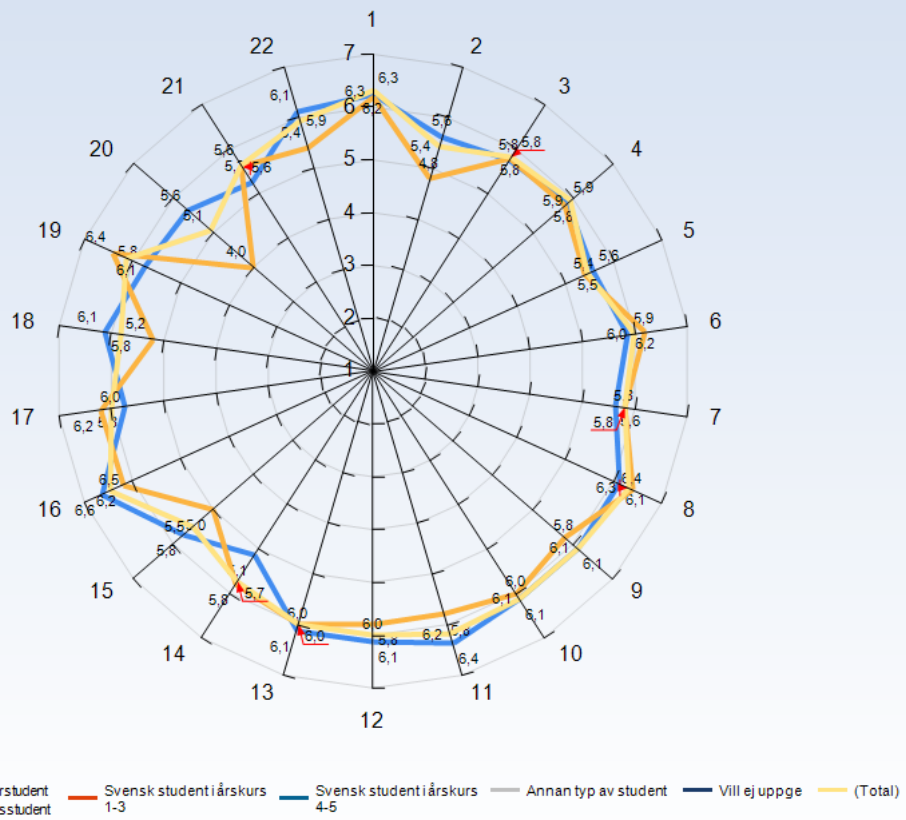
Comments

GENERAL QUESTIONS

What was the best aspect of the course?

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

Centralized discussion about adaptive signal processing.

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

Interesting material

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

The homeworks are a good way to keep pace with the course. The projects were interesting too.

Organisation of the concepts was good. Lectures were brief and understandable.

I like the project

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

The computer exercises help a lot to understand how to apply the methods numerically.

The assignments were the best aspect of the course. They permmit us to work regularly the course.

The general organization. The assignments were a good way to keep working continuously on the course too.

Projects

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

Adaptive part

I think it is a really interesting topic and I enjoyed the projects and computer exercises. Everything I learned I could implement on MATLAB and the exercises were a great tool for that.

Hand scripts teaching

What was the best aspect of the course? (I worked: 24-26 timmar/vecka)

The continuous feedback given from the homework sets really helped me learn. I also noticed that much of what I learned doing those ended up helping me on the exam.

What would you suggest to improve?

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

More diverse topics in terms of project, not only noise cancellation, e.g., predicetion could be a good topic etc.

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

The tutorials weren't very useful

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

Maybe more interactive lectures would help even more in the understanding of the concepts.

couldn't follow the tutorial problems.

It would be better if idea of the question could be said in brief and a particular time is given to try it by students before the teacher solves it by himself.

It will be good to have few tutorials with groups, so that we could discuss with one another.

make the instruction of project more undersatble

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

Give solutions to the homeworks after the deadline.

The exercises could be more challenging

Provide solutions to the homework questions

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

Maybe varying example from different enviroments

I prefer the tutorials where the students have time to work in groups and work on the exercises together. Then, the TA can write the solutions on the blackboard and discuss with the class. Even if the amount of exercises finished is less, it makes you work more. Sometimes we don't have time to work on exercises before the tutorials and then sometimes you just copy the solution and understand it.

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)
Enjoy.

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

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)
Do your homework, spend time on the projects. They will save you a lot of revision time.
Discussing the topic studied with classmates, makes it easier for understanding the concept.
review what you have learned

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)
Start working on the computer exercises ASAP.
To do seriously the assignments and to attend the courses.
Try to follow the advice that is given at the beginning of the course.
Read regularly the lecture notes and do the optional assignments!
Solve all homework questions and explore ideas in the projects

What advice would you like to give to future participants? (I worked: 18-20 timmar/vecka)
Do the homeworks
Spend time on the projects because they are a good complement to the theory. Before working on the projects, finish the computer exercises, you will save a lot of time!
Go to lectures and tutorials. Finish homeworks. Take projects seriously.

What advice would you like to give to future participants? (I worked: 24-26 timmar/vecka)
Whenever you are presented with a new filter or algoritm, try to implement it in Matlab. It helps you understand how it works and prepares you for the projects.

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

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)
Nothing

SPECIFIC QUESTIONS

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

-3 = No, I strongly disagree with the statement
0 = I am neutral to the statement
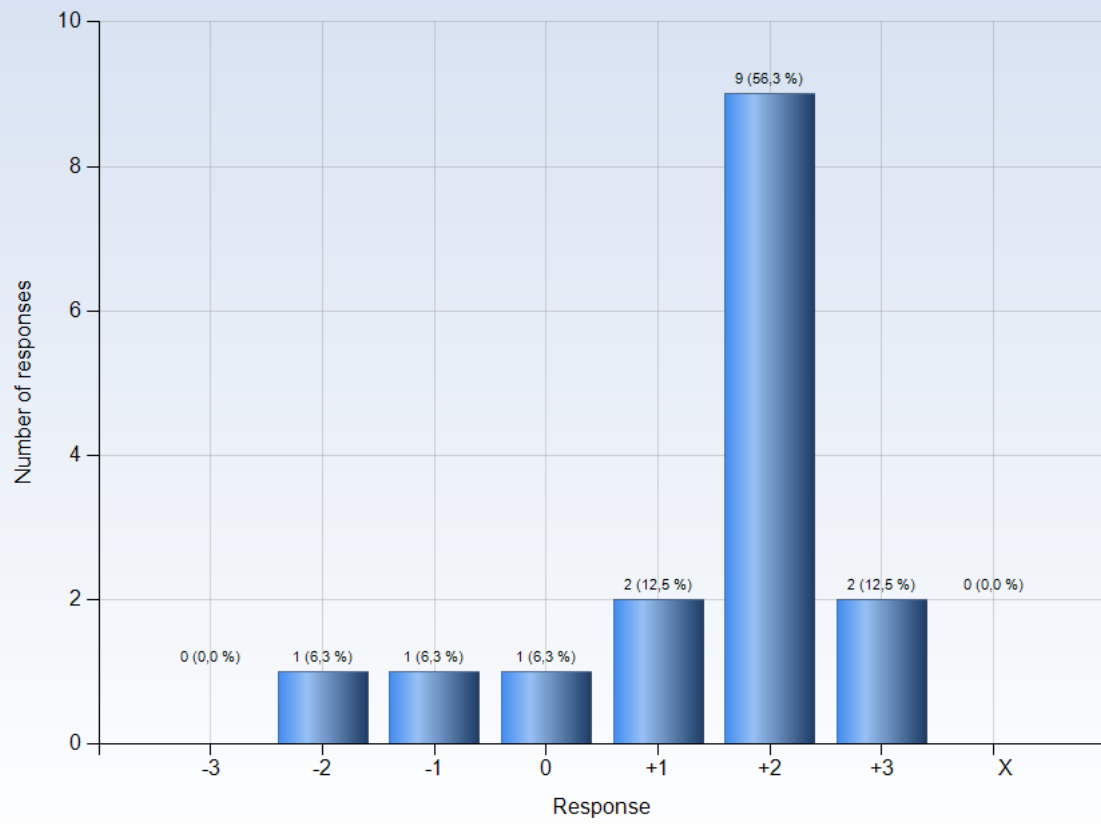+3 = Yes, I strongly agree with the statement

X = I decline to take a position on the statement
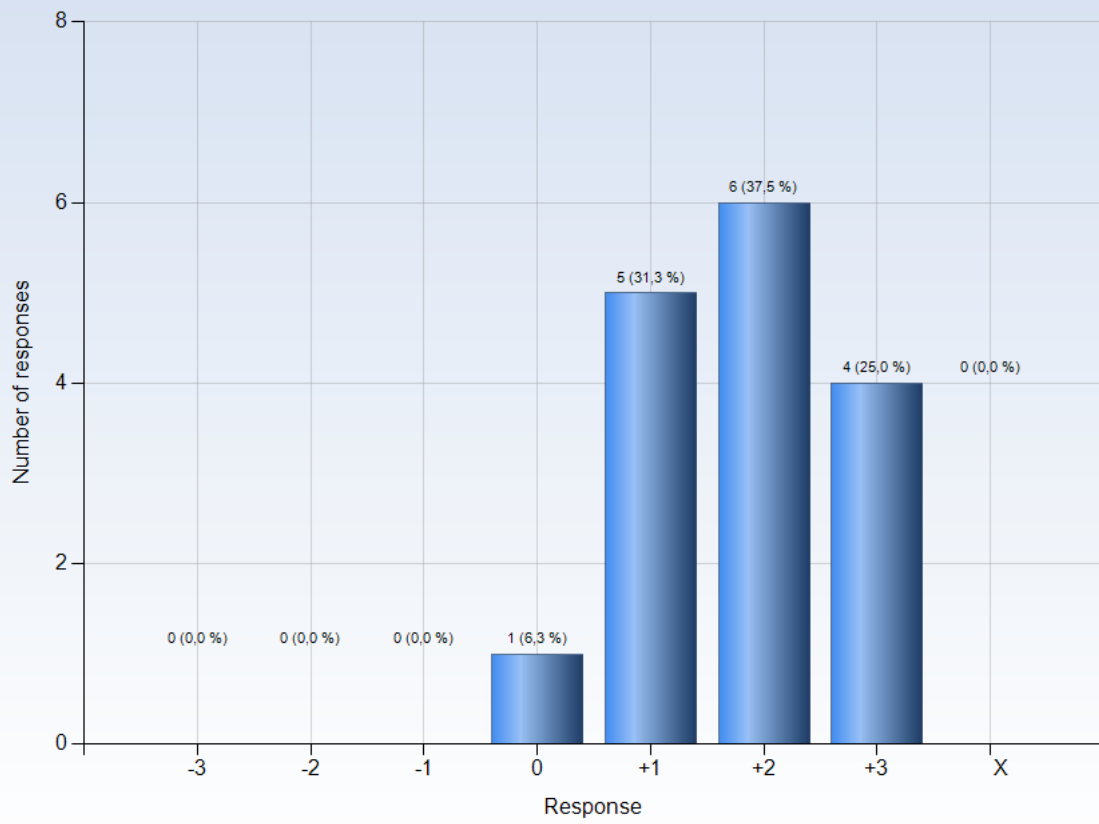
1. I worked with interesting issues
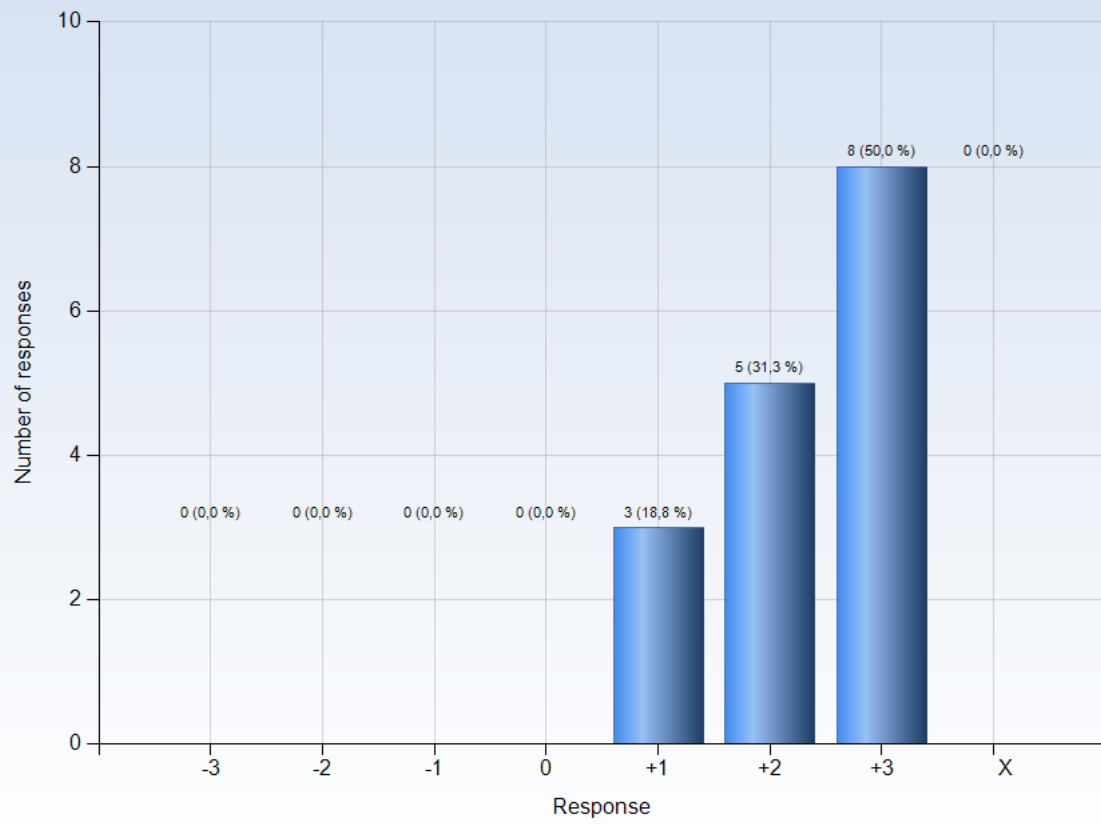
Comments
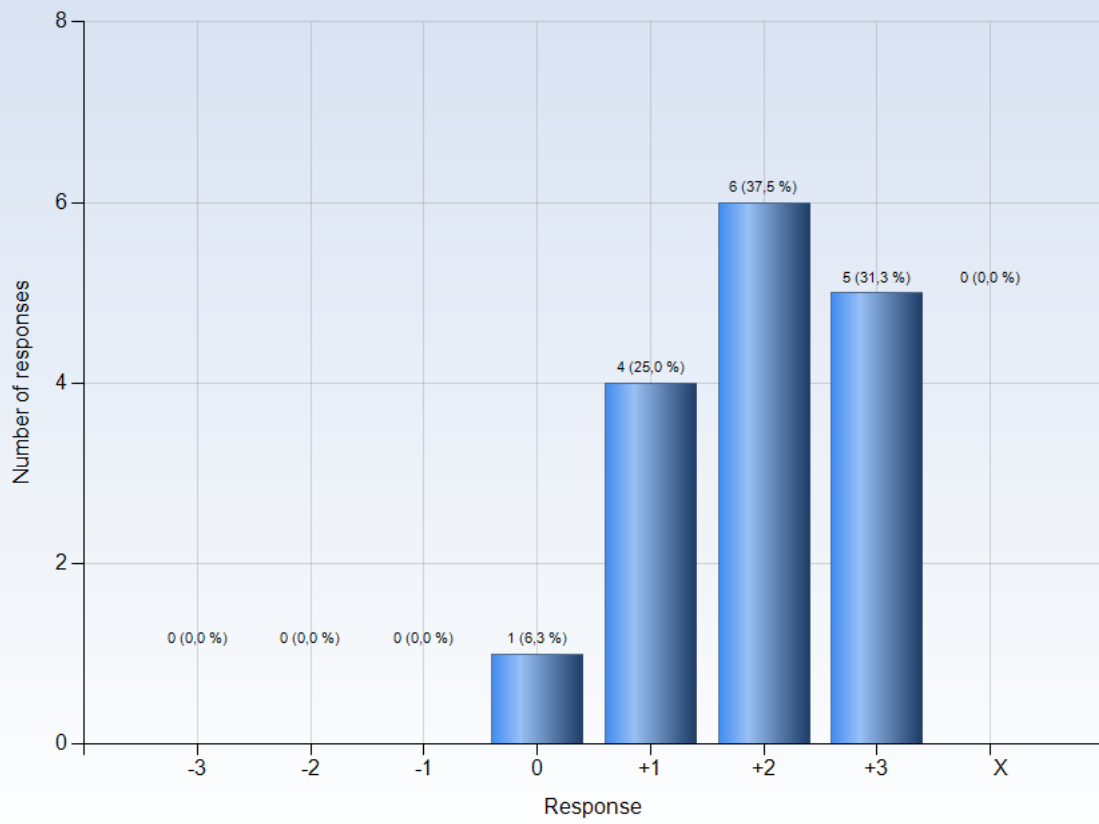
2. I explored parts of the subject on my own

Number of responses vs Response

- -3: 0 (0,0 %)
- -2: 1 (6,3 %)
- -1: 1 (6,3 %)
- 0: 1 (6,3 %)
- +1: 2 (12,5 %)
- +2: 9 (56,3 %)
- +3: 2 (12,5 %)
- X: 0 (0,0 %)

Comments

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

Number of responses

0 (0,0 %) 0 (0,0 %) 0 (0,0 %) 1 (6,3 %) 5 (31,3 %) 6 (37,5 %) 4 (25,0 %) 0 (0,0 %)

Response

-3 -2 -1 0 +1 +2 +3 X

Comments

4. The course was challenging in a stimulating way

0 (0,0 %)   0 (0,0 %)   0 (0,0 %)   1 (6,3 %)   4 (25,0 %)   6 (37,5 %)   5 (31,3 %)   0 (0,0 %)

Comments

5. I felt togetherness with others on the course
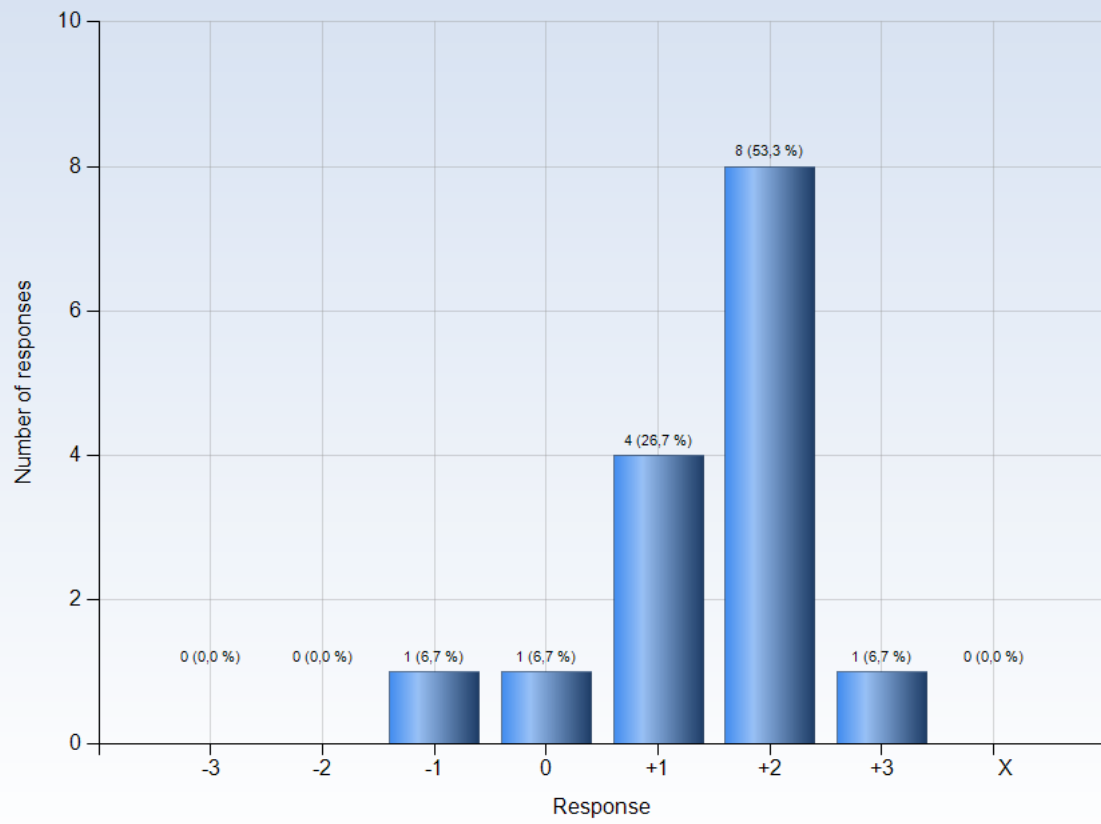
Comments

6. The atmosphere on the course was open and inclusive
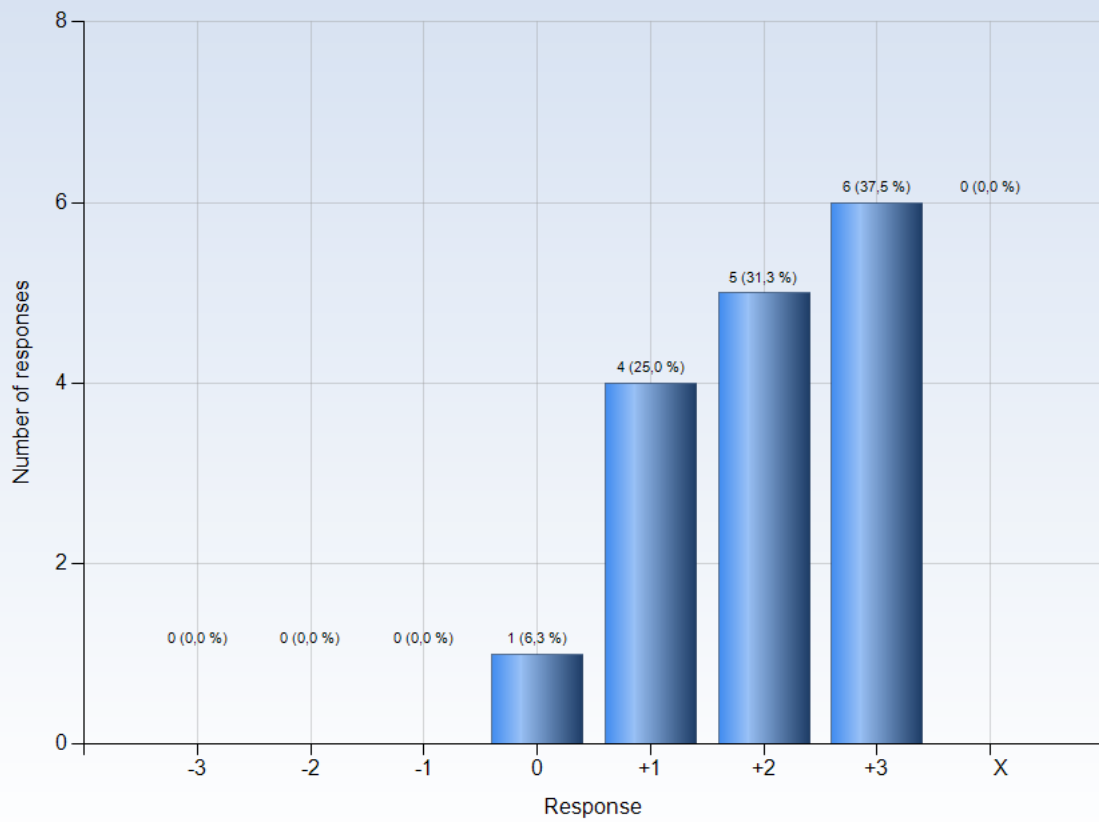
Comments

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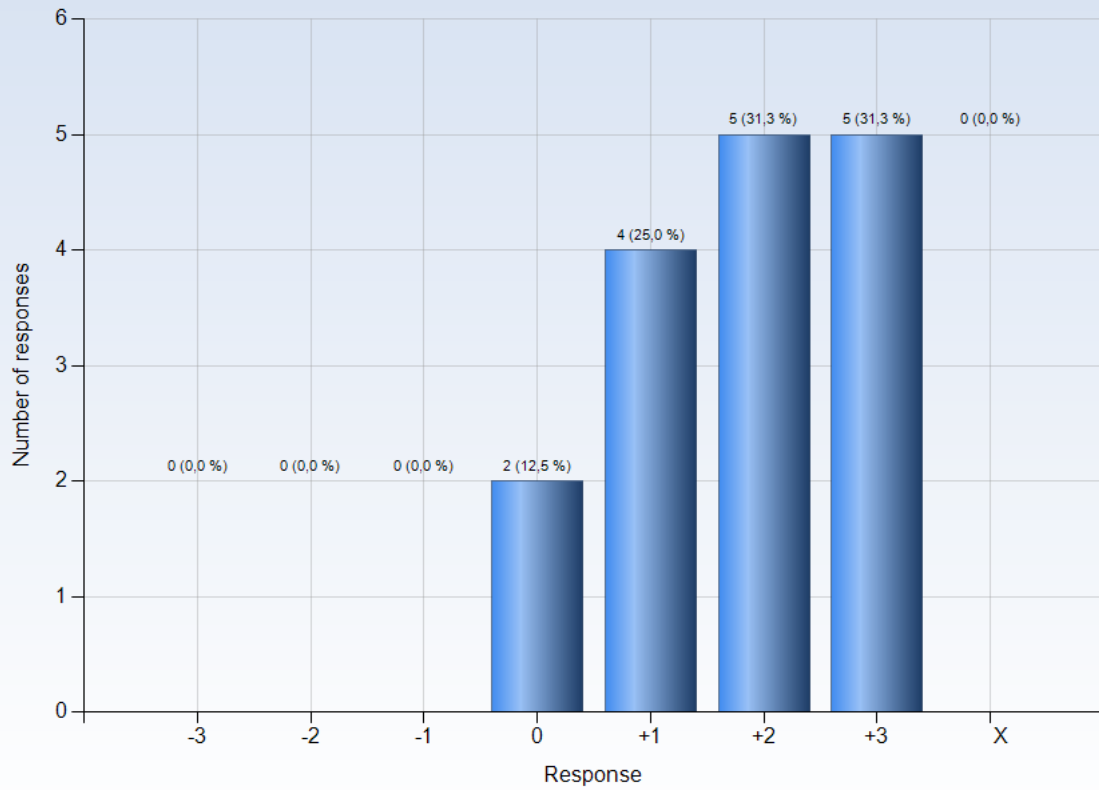
Comments

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

Number of responses

Response	Count
-3	0 (0,0 %)
-2	0 (0,0 %)
-1	0 (0,0 %)
0	0 (0,0 %)
+1	2 (12,5 %)
+2	7 (43,8 %)
+3	7 (43,8 %)
X	0 (0,0 %)
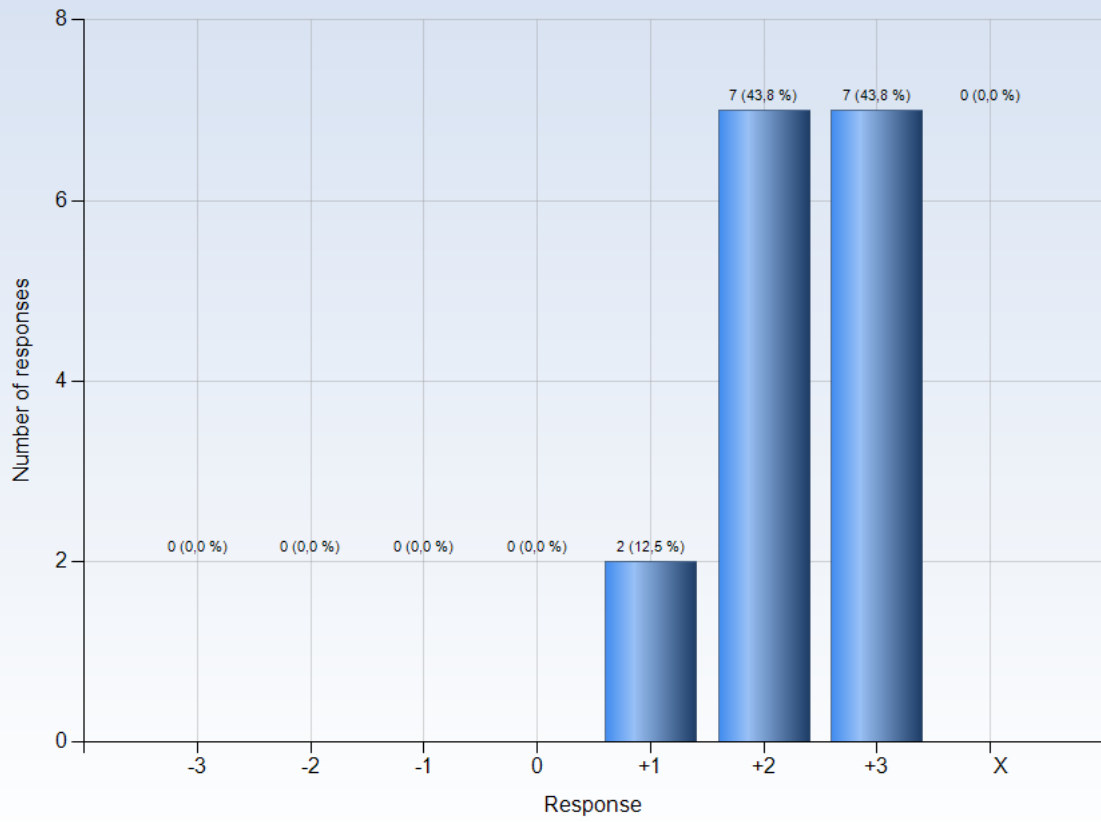
Comments

9. I understood what the teachers were talking about
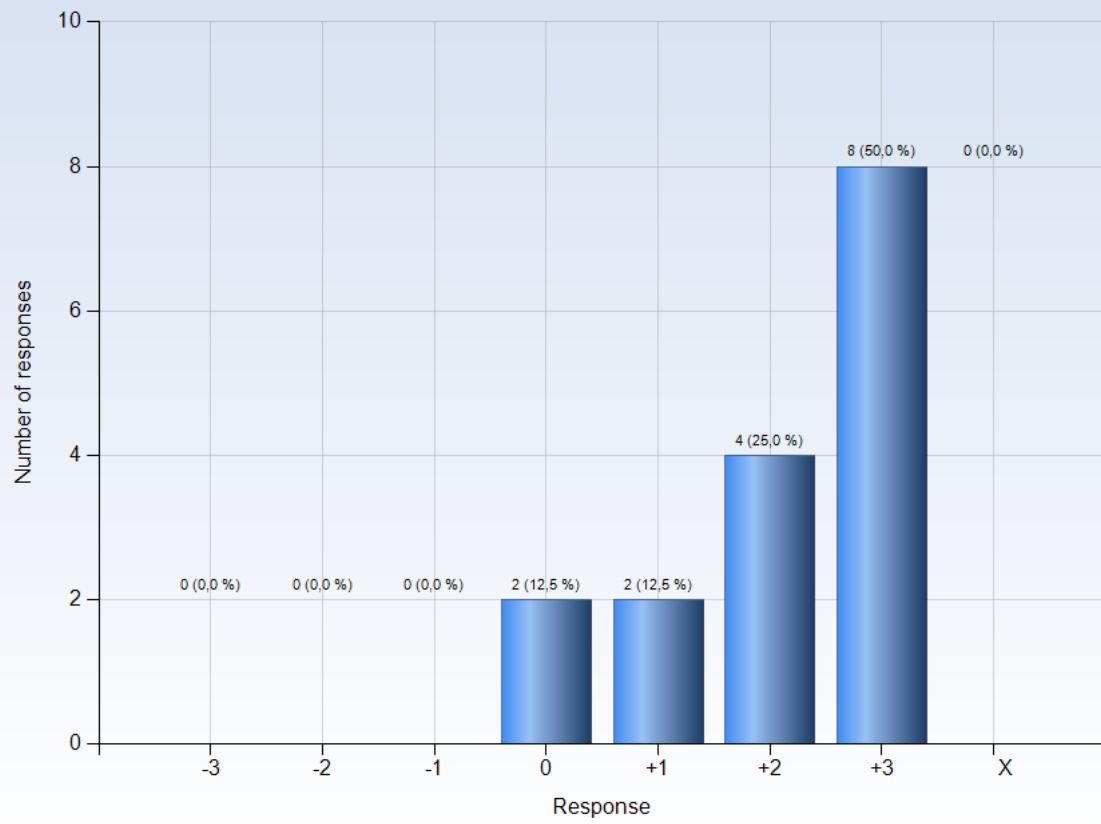
Comments

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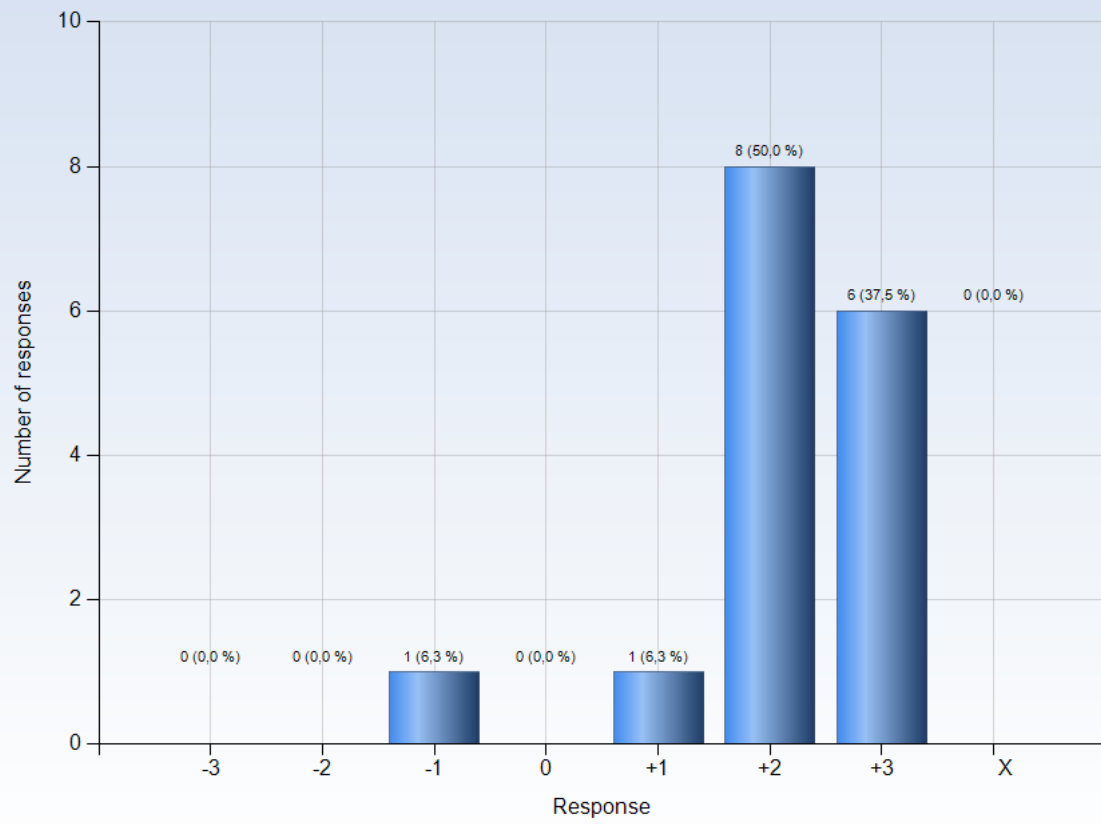
Comments

11. Understanding of key concepts had high priority
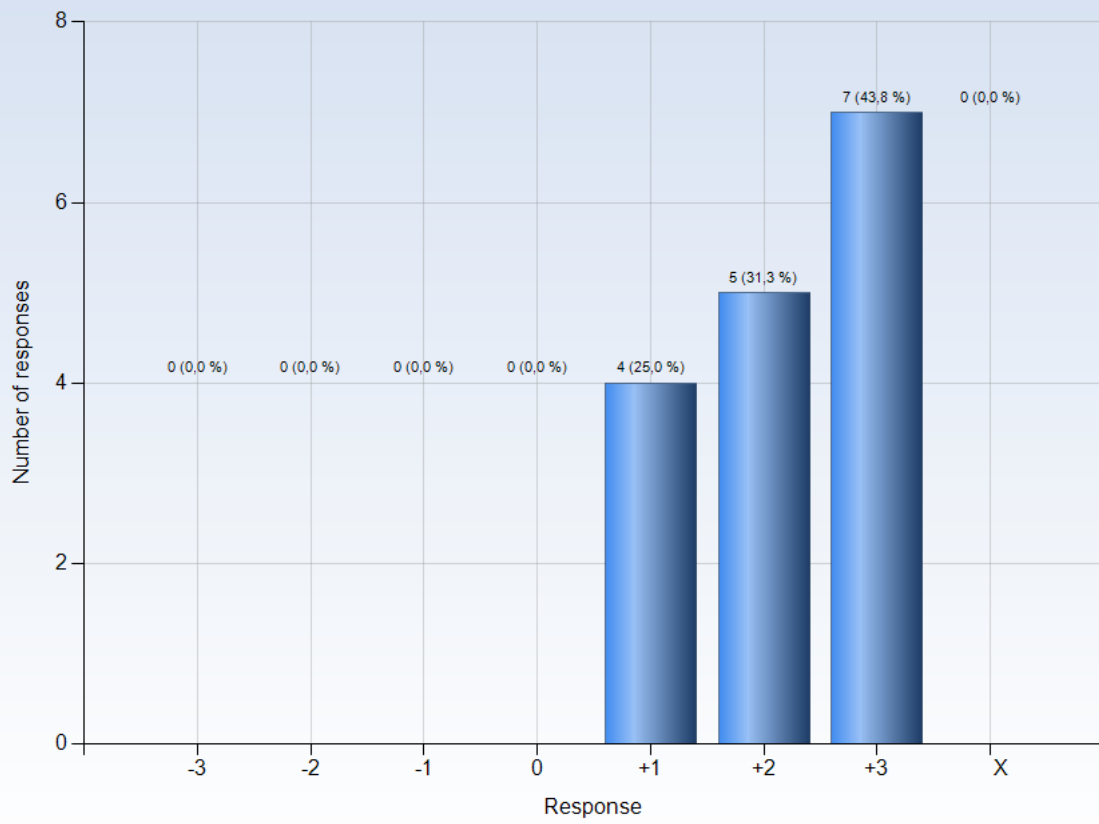
Comments

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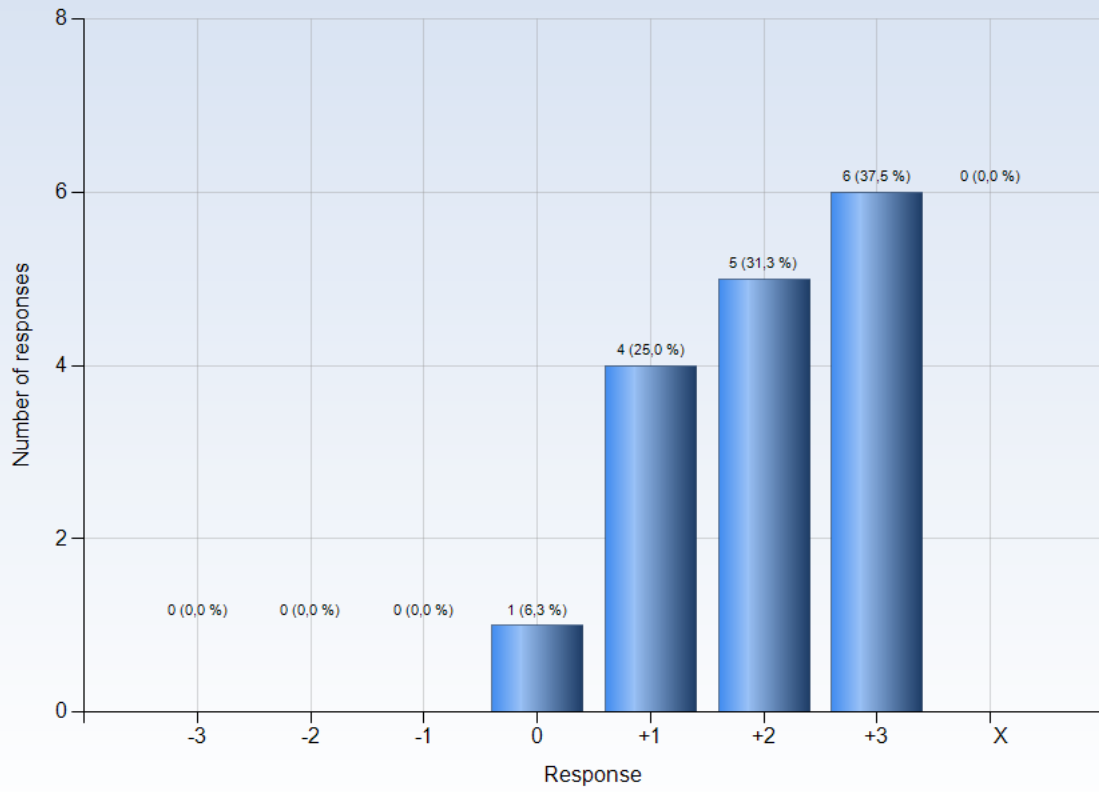
Comments

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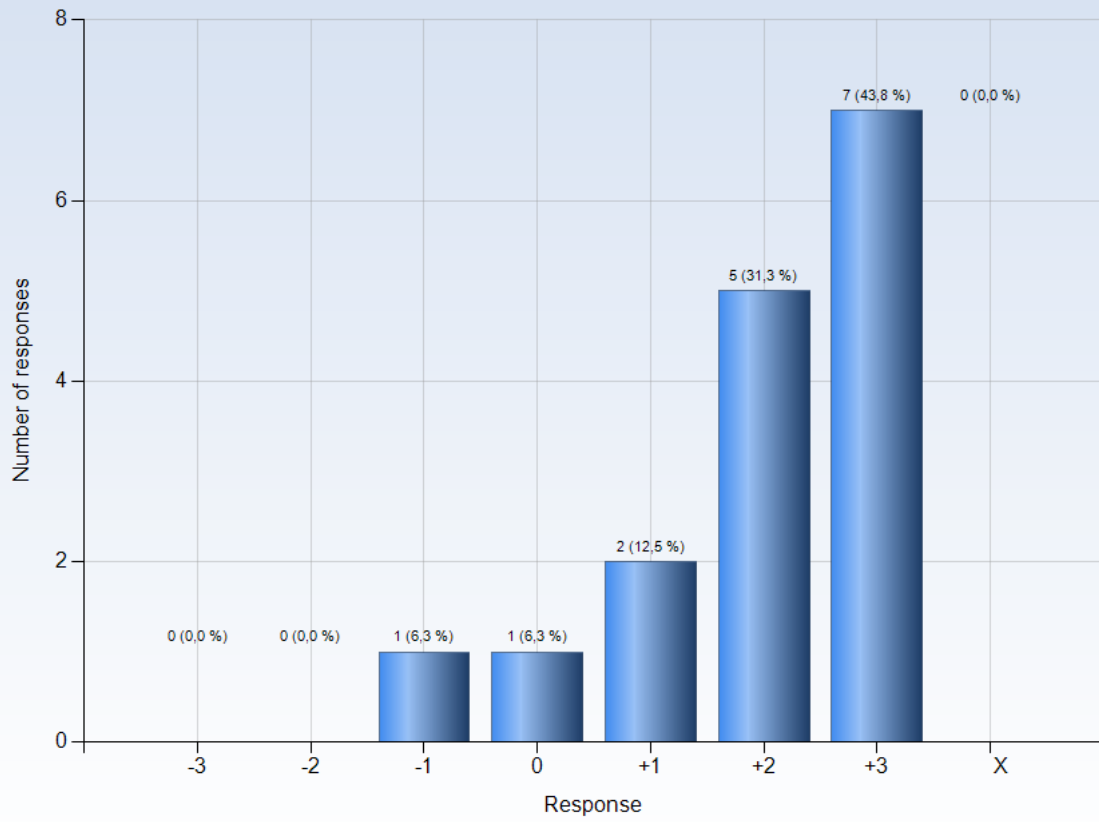
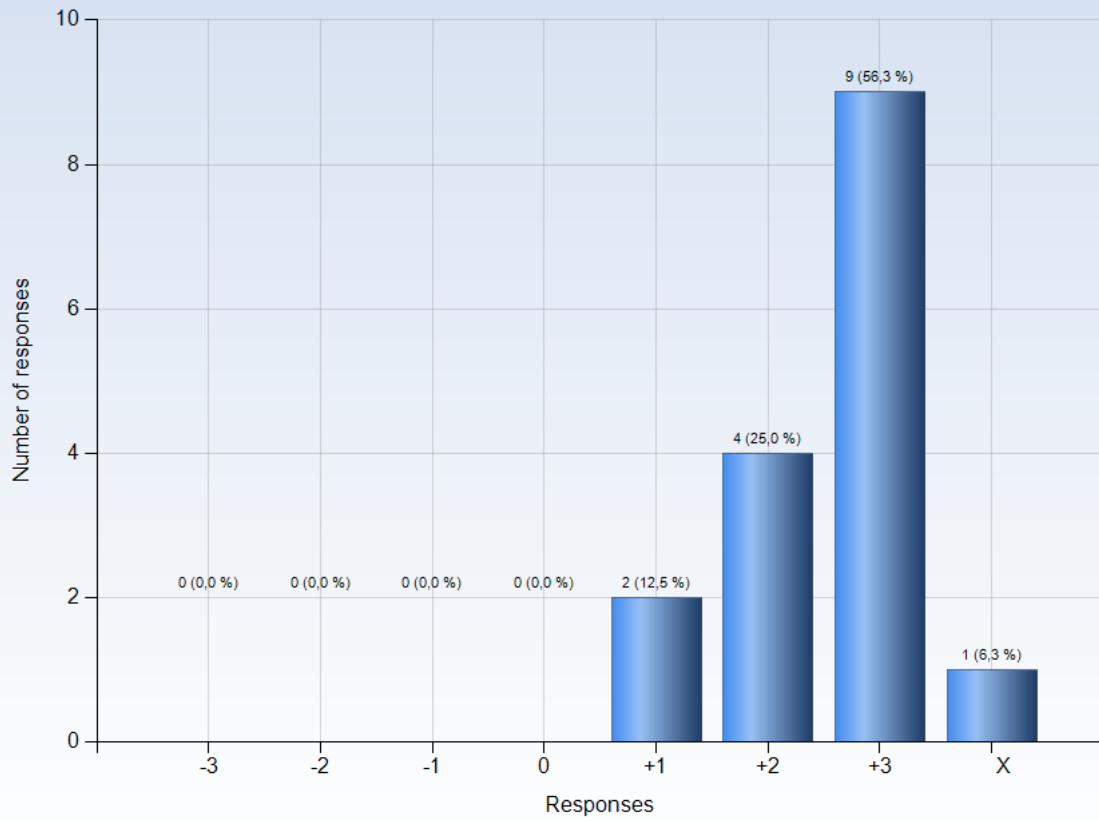**Comments**

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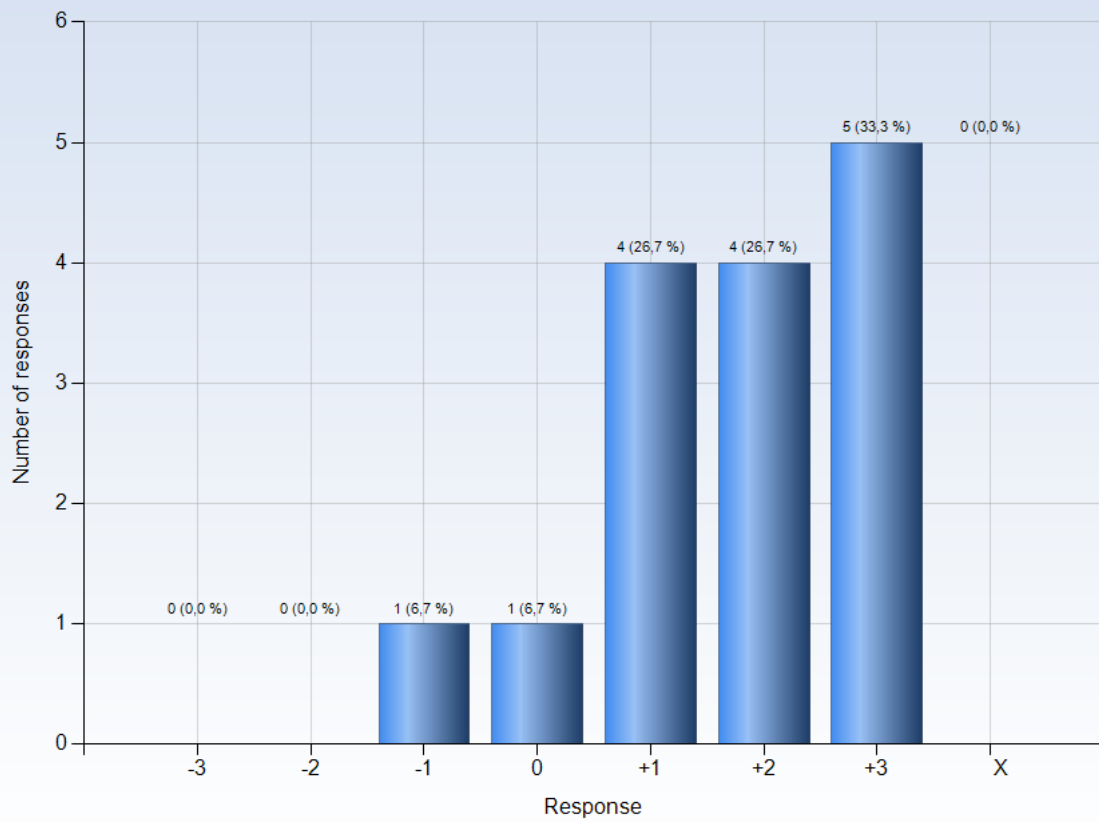
Comments

15. I could practice and receive feedback without being graded

Number of responses

0 (0,0 %)   0 (0,0 %)   0 (0,0 %)   5 (31,3 %)   5 (31,3 %)

4 (25,0 %)   0 (0,0 %)

2 (12,5 %)

Response: -3, -2, -1, 0, +1, +2, +3, X
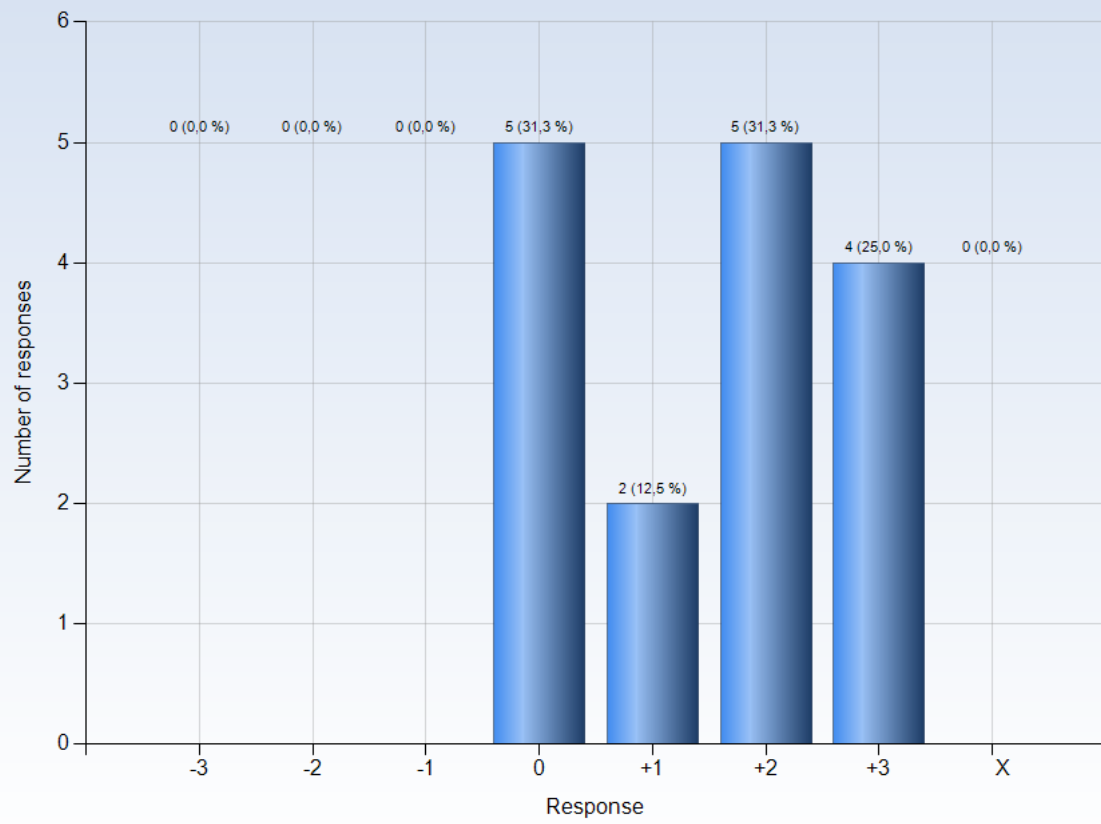
Comments

16. The assessment on the course was fair and honest

Comments

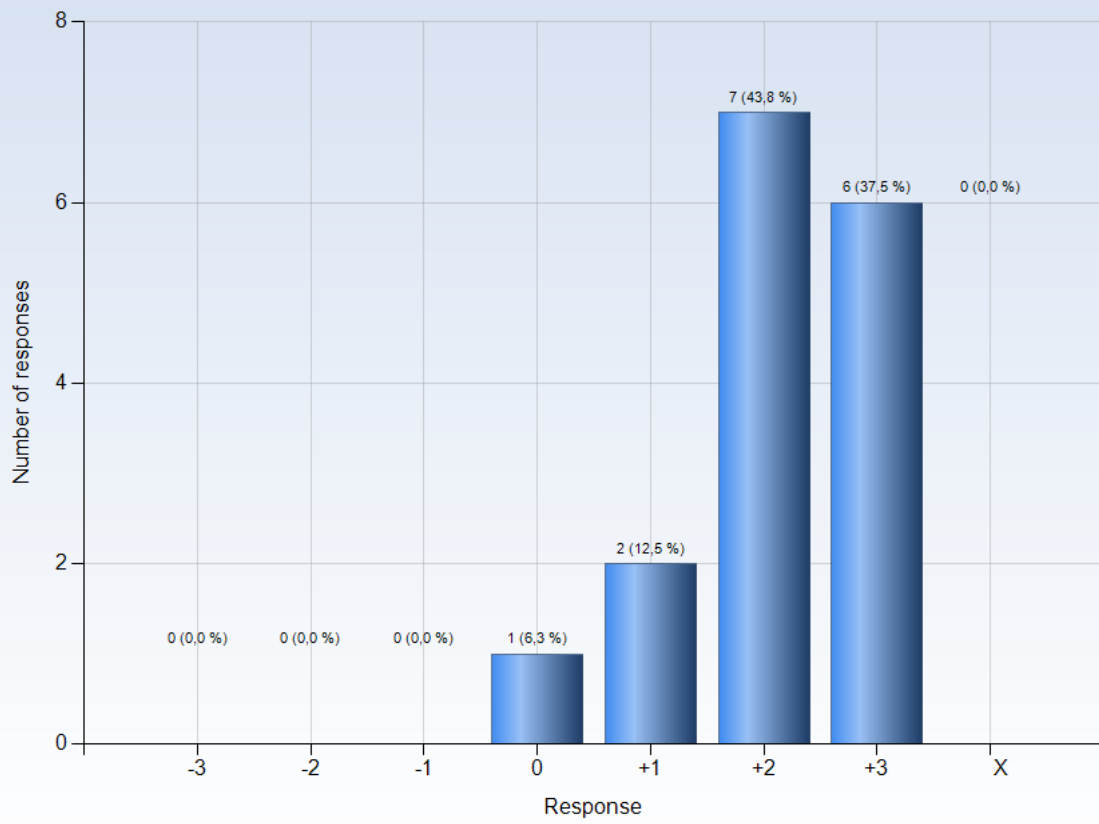## 17. My background knowledge was sufficient to follow the course

Number of responses

0 (0,0 %)　0 (0,0 %)　0 (0,0 %)　2 (12,5 %)　1 (6,3 %)　8 (50,0 %)　5 (31,3 %)　0 (0,0 %)

-3　-2　-1　0　+1　+2　+3　X

Response
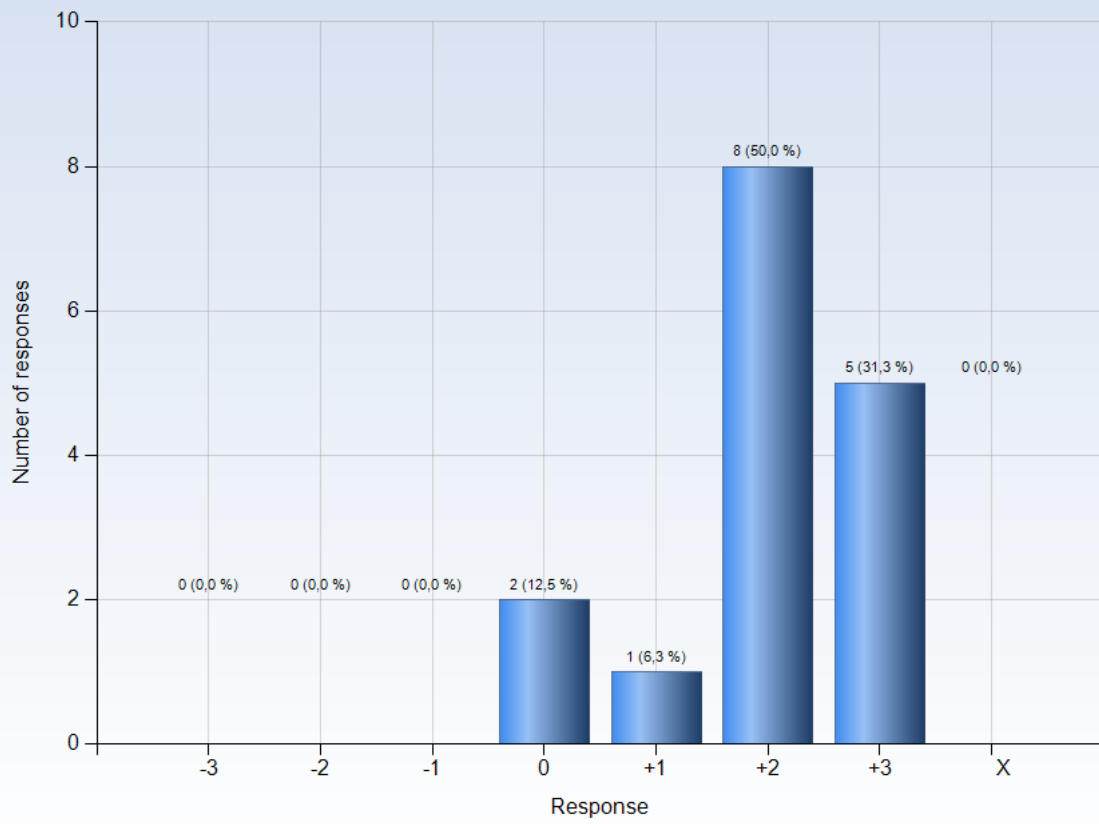
Comments

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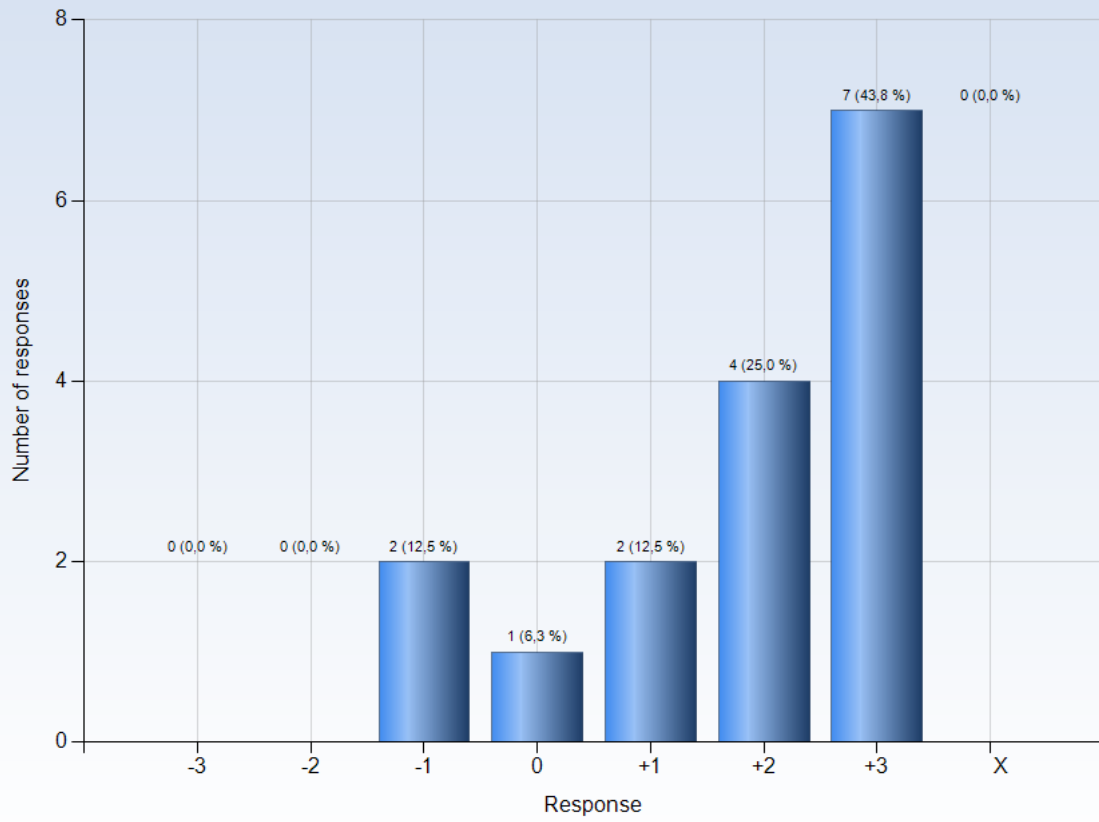
Comments

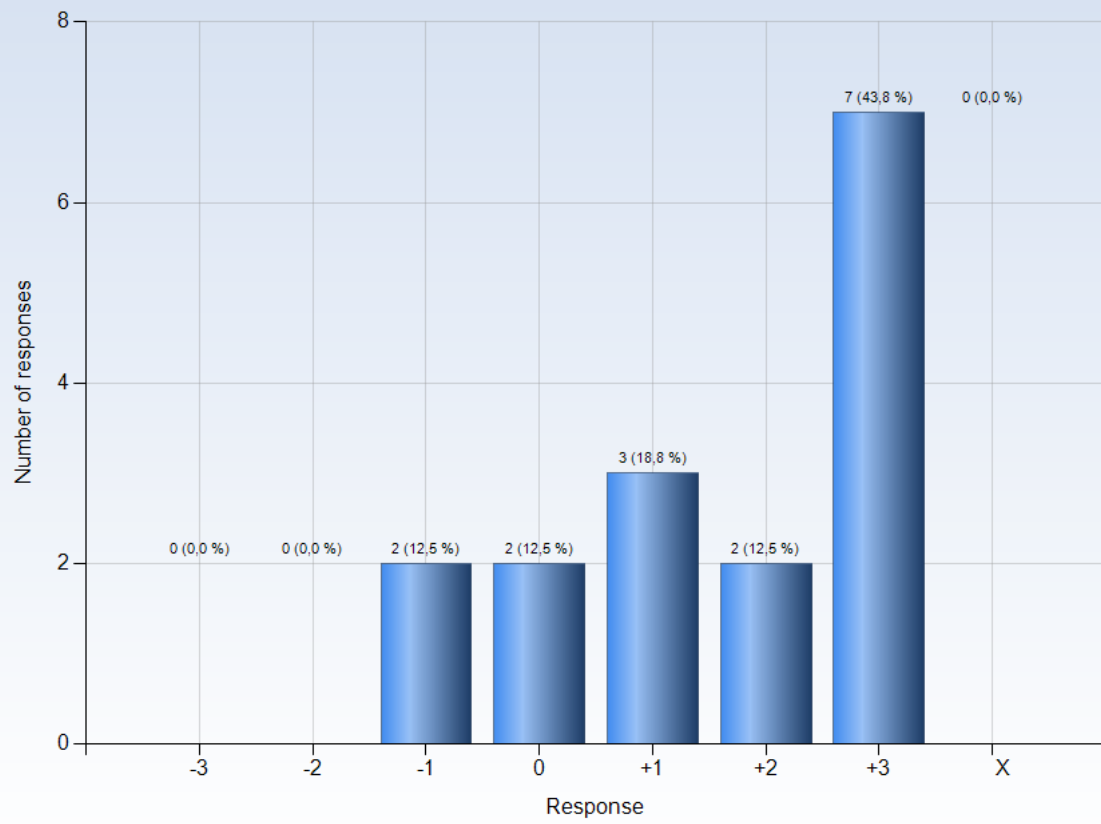## 19. I was able to learn in a way that suited me

Comments

20. I had opportunities to choose what to do
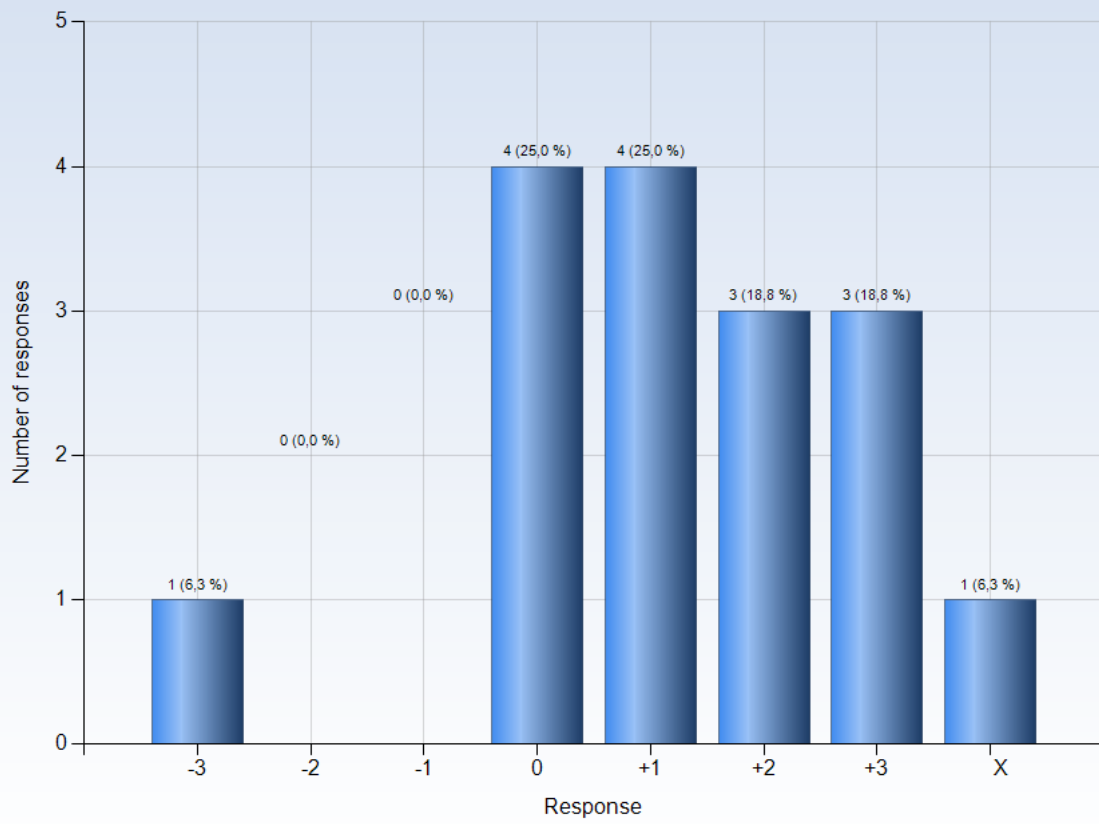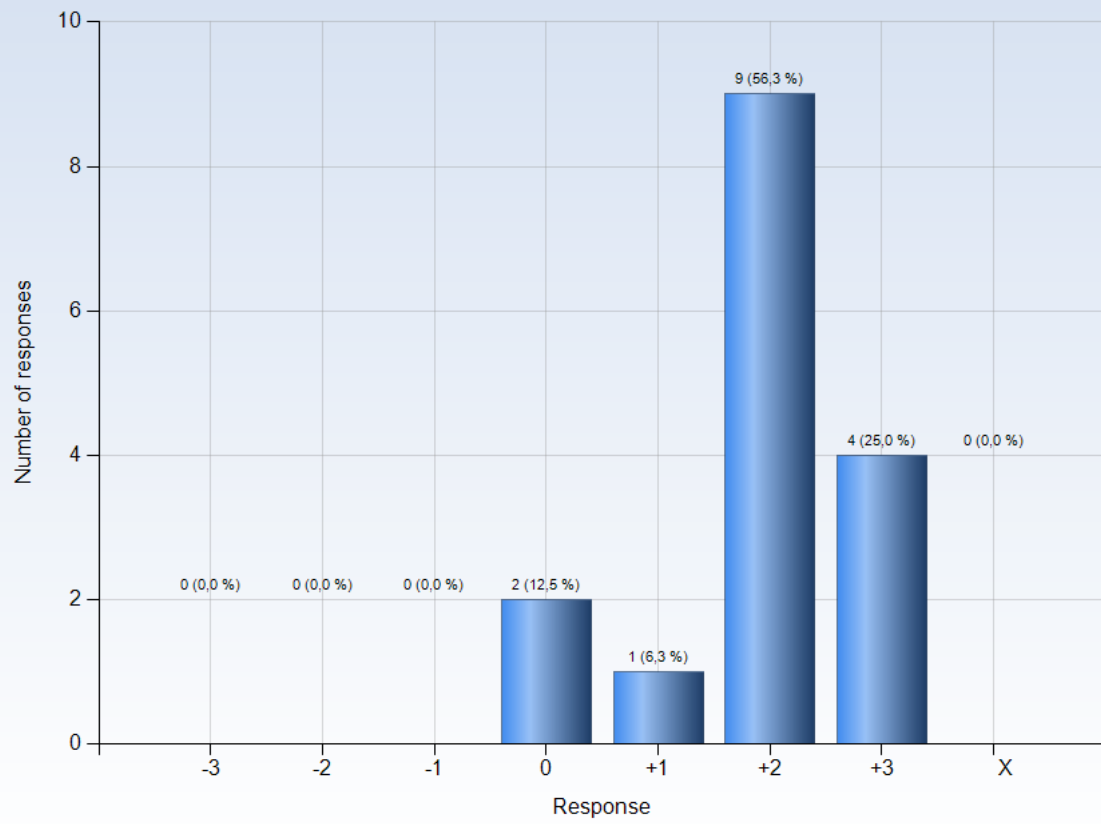

Comments

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

Comments

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

Comments