ID2202 - 2018-01-22
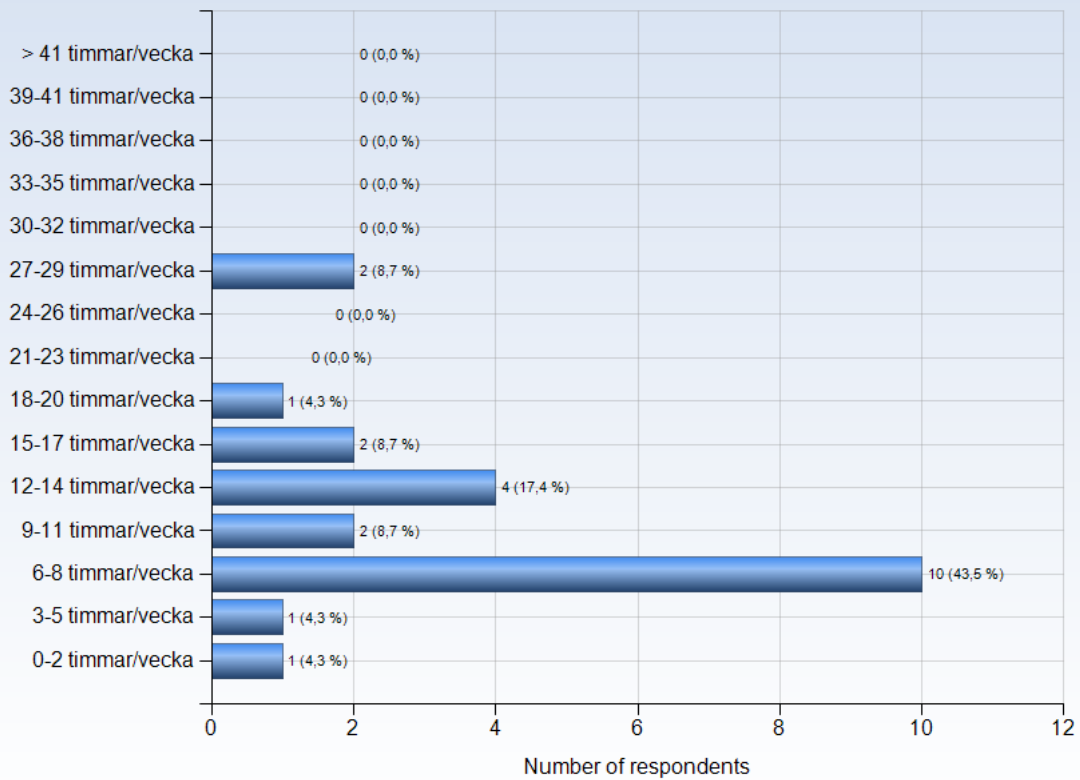
Antal respondenter: 68
Antal svar: 25
Svarsfrekvens: 36,76 %

ESTIMATED WORKLOAD

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

Category	Number of 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	2 (8,7 %)
24-26 timmar/vecka	0 (0,0 %)
21-23 timmar/vecka	0 (0,0 %)
18-20 timmar/vecka	1 (4,3 %)
15-17 timmar/vecka	2 (8,7 %)
12-14 timmar/vecka	4 (17,4 %)
9-11 timmar/vecka	2 (8,7 %)
6-8 timmar/vecka	10 (43,5 %)
3-5 timmar/vecka	1 (4,3 %)
0-2 timmar/vecka	1 (4,3 %)

Comments

Comments (I worked: 3-5 timmar/vecka)
But I unfortunately didn't do the optional lab

Comments (I worked: 6-8 timmar/vecka)
This course is highly recommended for anyone who wishes to pursue a career in Embedded Systems/ Computer Science. The course deep dives into the compiler and provides a very good foundation to understand how software is transformed to machine readable code. Initially, it was difficult to keep pace with lectures and without proper reading or homework it is difficult to follow the lectures for someone who is new to compilers. The lecture expects students to already be at a certain level of basics which cannot happen without material reading. Once you grasp the key concepts the lecture becomes interesting and then listening to the recorded audio lectures makes so much sense.
most time spent on the theory learning

Comments (I worked: 9-11 timmar/vecka)
I am new to the concepts in this subject. So it took me a while to follow the subject. I had to read through the text book to understand the things thoroughly. But once I got the initial concepts, it was easy to follow.

Comments (I worked: 15-17 timmar/vecka)
assignments consumed a lot of time but helped me to understand problems.

Comments (I worked: 27-29 timmar/vecka)
Den här kursen är krävande. Det tar tid innan man smälter det man har gått igenom, men den samtidigt väldigt givande. Definitivt en av de bästa kurserna jag har läst om inte den bästa.

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:
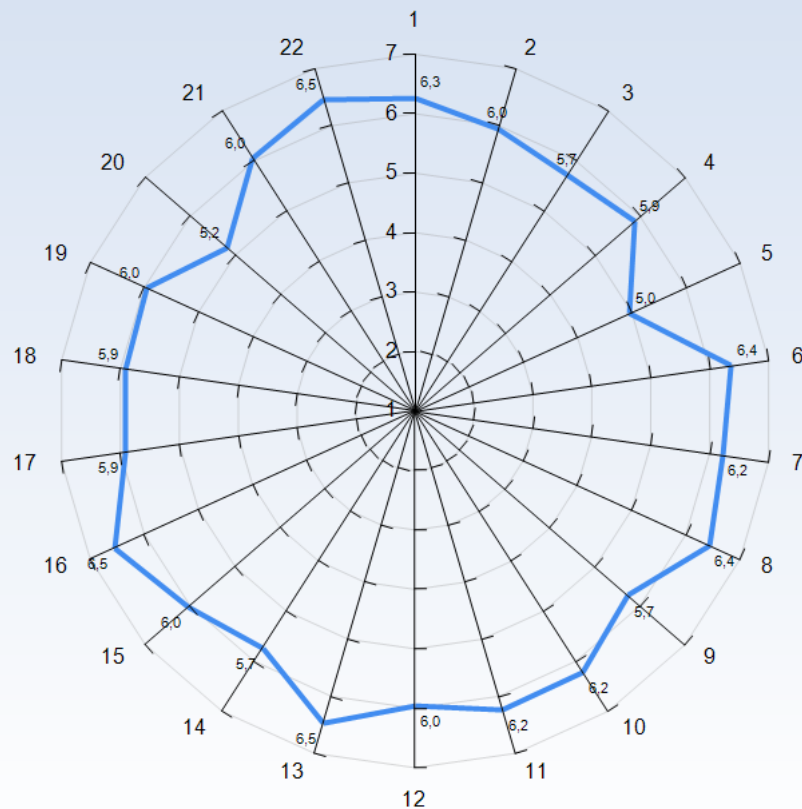
1 = No, I strongly disagree with the statement
4 = I am neutral to the statement
7 = Yes, I strongly agree with the statement

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.

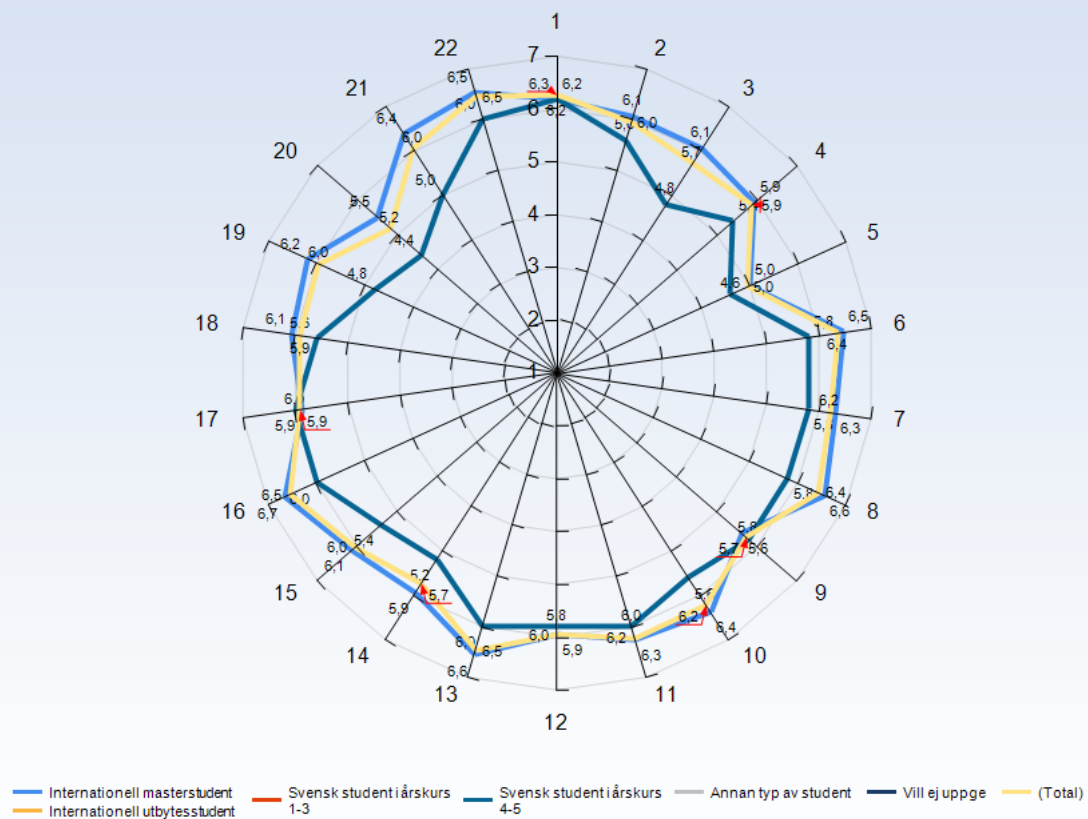Average response to LEQ statements - per gender

Legend: Kvinna, Man, Annat, Vill ej uppge, (Total)
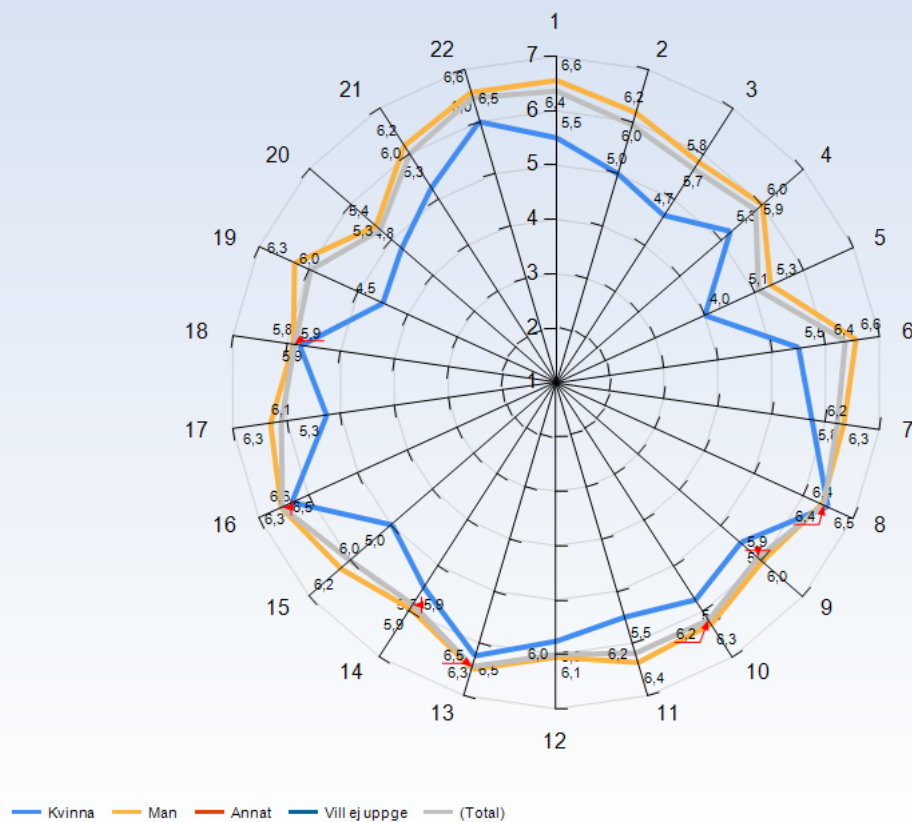
Comments

Comments (I am: Man)

Having reasonable work experience in embedded software. Currently doing my masters at EIT in Embedded Systems.

there must be a re exam on June 2018 and there must be at least 3 exam on one academic. according to what the teacher said its only an oral exam on June for those who failed. what happens for those who could not participate in the ordinary exam? its very unfair and illegal according to KTH polycy

Average response to LEQ statements - per type of student

Legend:
- Internationell masterstudent
- Internationell utbytesstudent
- Svensk student i årskurs 1-3
- Svensk student i årskurs 4-5
- Annan typ av student
- Vill ej uppge
- (Total)

Comments

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

there must be a re exam on June 2018 and there must be at least 3 exam on one academic. according to what the teacher said its only an oral exam on June for those who failed. what happens for those who could not participate in the ordinary exam? its very unfair and illegal according to KTH polycy

Comments (I am: Annan typ av student)

International bachelor 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)

Since I was not attending the course with a big programming background, I really liked that abstract and perhaps more general way the course was taught.

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

The lecturer. Very enthusiastic and fun to learn from.

The teacher's thorough lectures, and the summary sessions.

Very interesting concepts reduced to a level easy for understanding. The course provides a very good overview. Lectures went as planned. Tutorials was a good aid for your understanding. Infact i understood most key concepts from tutorials than lectures.

the lecturer, make the lecture interesting and attractive. and the recording is available after every lecture

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

Inspiring subject with an engaged lecturer. The topics were carefully explained and further insights were shared alongside with the slides.

It was well organised.

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

Christian is a great teacher, able to explain hard concepts in an easy way. He is also very organised and the course was well structured.

LL(k)/LR(k) parsing, register allocation, instruction selection, all of these are interesting topics. And Christian and other lecturers offered good insights in these topics.
More importantly, Christian always posed interesting questions on lectures.
Offer to join the LLVM conference was appreciated.

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

The course recording is really helpful to recap about past class

I more-less understood how compilers work. It's very important.

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

Det var många saker som jag tycker var bäst, till och börja med kursens innehåll, lärarens sätta att lära ut och förklara. Lärarens interaktion med eleverna, har brukar alltid ställa frågor under föreläsningarna för att se om vi hänger med, det tycker jag är en väldigt viktig del av varje föreläsning som varje lärare borde göra. Kursen var väldigt bra, givande med intressant innehåll. Förmodligen den bästa kursen jag har läst! Bravo Christian!

The course gave a great overview of the compilers different phases. This is very interesting especially for students who are from different background than computer science.

What would you suggest to improve?

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

Even more concret examples during the lectures (even if tutorials and assignments were really good at illustrating the course)

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

Lecture slides and book. Tiger book is a terrible read as it focuses mainly on algorithms and miniJava. Lecture slides followed book and so naturally they were not very well made either (because of the book). Presenting large pseudo-codes for algorithms on slides was rather unappealing and unintuitive. In fact, what was rather easy to understand seemed rather difficult from the lecture.

Some exercises were unclear, specifically the one with the register allocation, where the question was a bit unclear compared to the lectures and the book.

May be discuss techniques in developing regular expression, DFA and NFA and interconversion between them.

The virtual machine was really "virtual" and linkers even more. More interactive discussion could be done for these concepts. Or better suggest a good reading material. The slides for these concepts were not that useful.

The course should have compulsory programming task!

practice performing

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

As stated earlier, I like practical labs. I don't know if that would improve the course though.

More practical work would make the course interesting.

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

The book is very poor and boring. It gives a lot of space to the MiniJava compiler implementation but we never get to build such compiler. It is also very hard to follow such project on our own since the Java code is outdated and the source templates are not available anymore. Moreover Java per se doesn't feel a realistic choice to try out a compiler; maybe something more functional or C would be better.

Learning by lab work. Some of my most insightful moments were trying to build my own stages of a compiler with Haskell, or inspecting output from GCC on an x86 architecture.

Some parts were barely even touched. Like abstract syntax trees and semantic analysis. Don't know if it's for better or worse.

Harder/larger lab-assignments

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

Change assignment to lab activity as it will give a real world implementation of how compiler is actually works

Many lectures are just copy&paste from book "Modern Compiler Implementation in Java". I couldn't understand some stuff from the lecture because it was too quick. I think that Christian spent too much time on parsers which we can understand on our own with the book or any other Internet resources. On the other hand, execution environments and virtual machines weren't analyzed properly and there is no supplementary literature on that topic.

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

Kursen kanske borde vara lite längre med tanke på att innehållet är så brett, men annars tycker jag inte någonting ska ändras i kursen, allting är på sin plats.

More discussions and more assignments.

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)
Take the course it's really nice !

What advice would you like to give to future participants? (I worked: 6-8 timmar/vecka)
Read different books. Don't stick to tiger book.
Attend the lectures! The teacher goes through everything, and revisits important topics. It will help you a lot.
Important suggestion is to read the material regularly otherwise you will be left behind in the course and will pile up all at once in the end.

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)
Go to all Christian lectures
It's not very hard passing this course by learning facts. But the benefits are only there if you reflect on why things work the way they do, or how models apply
to real life compilers.

What advice would you like to give to future participants? (I worked: 15-17 timmar/vecka)
Don't go to lectures about parsers, study on your own. Focus on assignments - deep understanding of topics covered by them will allow you to get a good grade on the exam. Tutorials aren't so useful.

What advice would you like to give to future participants? (I worked: 27-29 timmar/vecka)
Gör inlämningar i tid, de hjälper mycket senare i kursen men även på tentan.
It is very interesting course that they should utilize. It needs a lot of work on your own using the references provided.

Is there anything else you would like to add?

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

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)
The lecturer has the potential to make for a great course, but I think the book needs to be changed.
A great course all in all!
A opportunity to take a re exam should be offered like other courses.

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

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)
This course should be compulsory: it closes the gap between the hardware/system courses (Computer Hardware Engineering, OS) and the software courses (Prog 1, Prog 2)

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)
1) IMO Christian is overusing phrases like "God damn it" and so on. I don't think they should be used during the lecture. For me, it's not a big problem but I saw that some students had been confused.
2) Labs should be obligatory, maybe some exercises should be given as new assignments?

Is there anything else you would like to add? (I worked: 27-29 timmar/vecka)
Grym lärare som kan mycket och som alltid brukar ta upp intressanta saker som han knyter med sina föreläsningar men som kanske inte finns med i kurslitteraturen. Jag har lärt mig massor av Christian och kommer även att välja hans andra kurs, man får ut väldigt mycket av hans kurser. Skolan behöver fler sådana. Grymt jobbat Christian!

SPECIFIC QUESTIONS

RESPONSE DATA

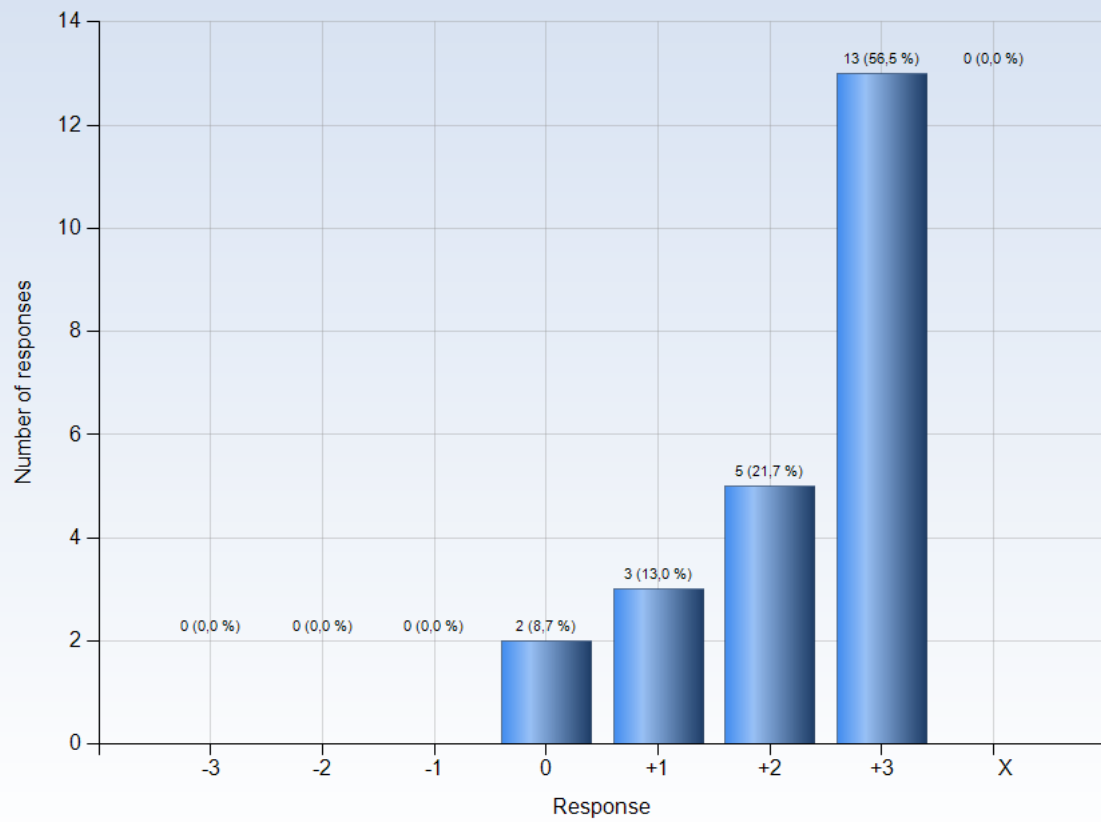The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-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
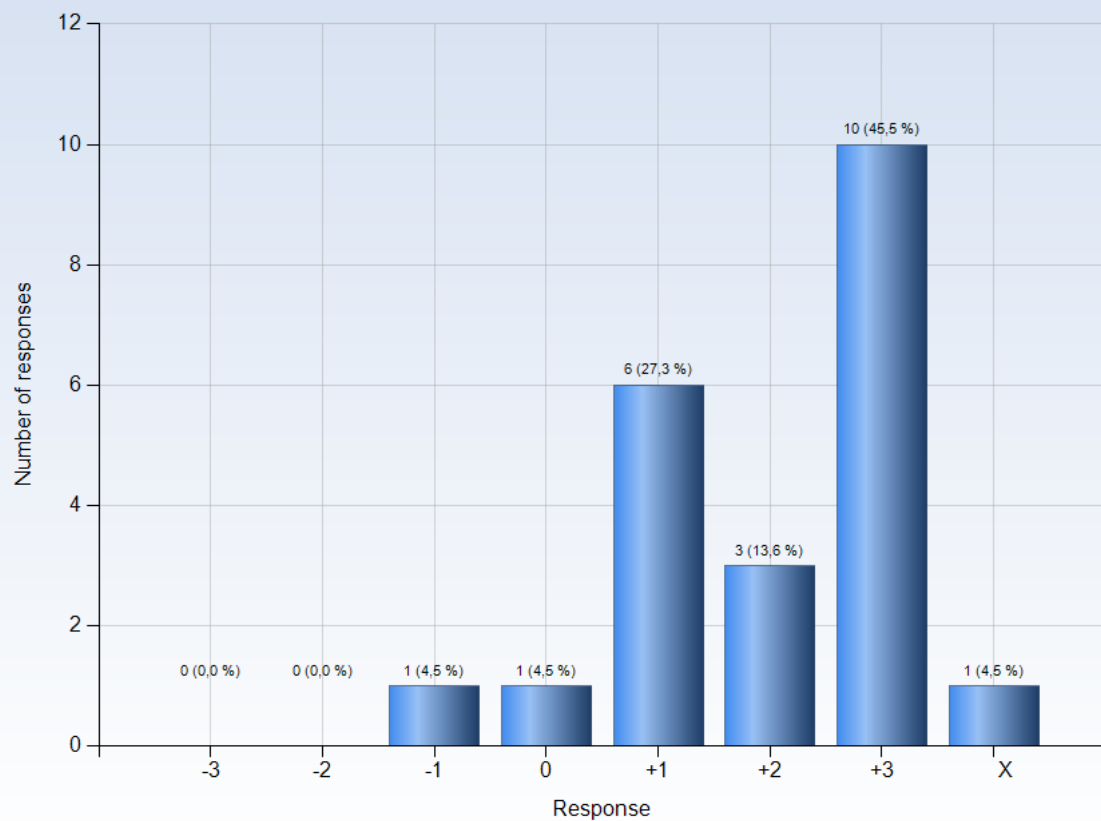
1. I worked with interesting issues

Comments

Comments (My response was: +1)
There was very less practical approach in the course. The workshop that was provided for selected students could have been atleast provided for all interested students.

Comments (My response was: +3)
Very interesting problems for a beginner in the area

2. I explored parts of the subject on my own

Comments

Comments (My response was: +1)

Wish I had explored more

I should have done the lab, it may sound absurd but I would have liked for it to be mandatory

Comments (My response was: +2)

LIke the stack frame, virtual machine, liners because these parts were really abstract and the lectures did not help.

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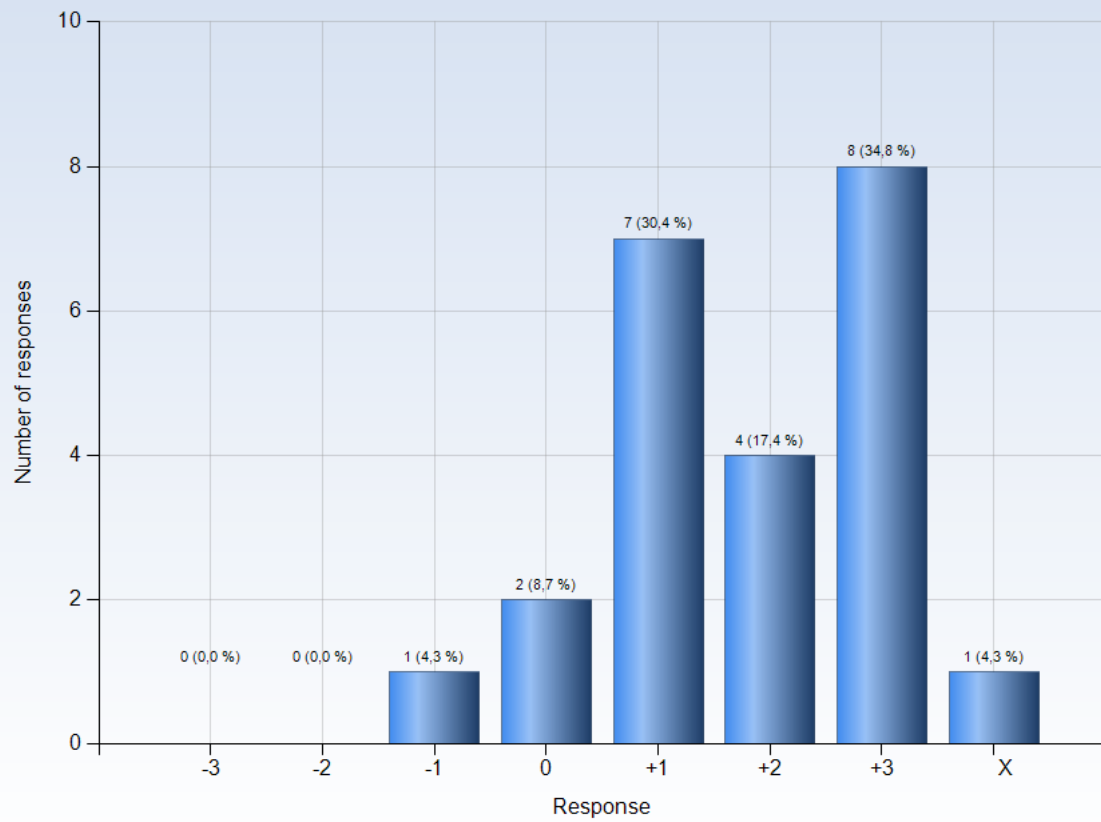
Comments

Comments (My response was: +1)
I guess the lab was here for that

4. The course was challenging in a stimulating way
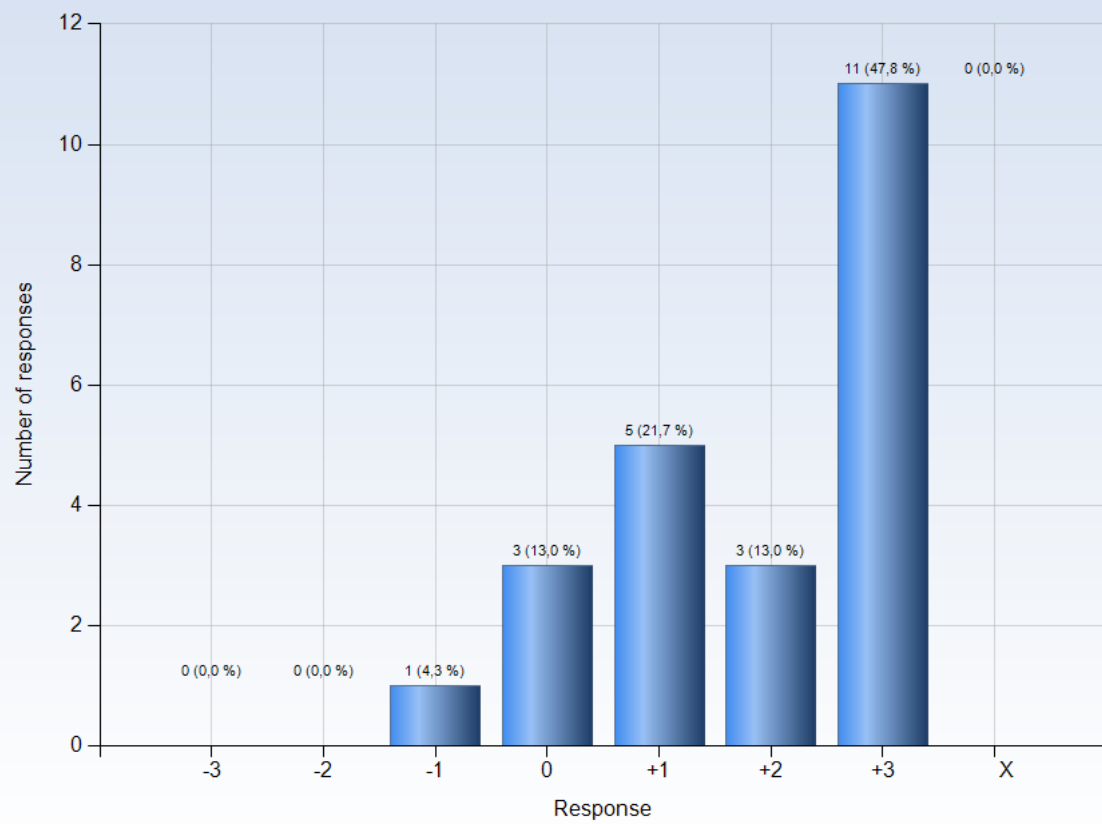
Comments

Comments (My response was: +1)
It was challenging for me as the concepts were new. But more practical work would have made it more interesting.

Comments (My response was: +3)
Absolutely

5. I felt togetherness with others on the course
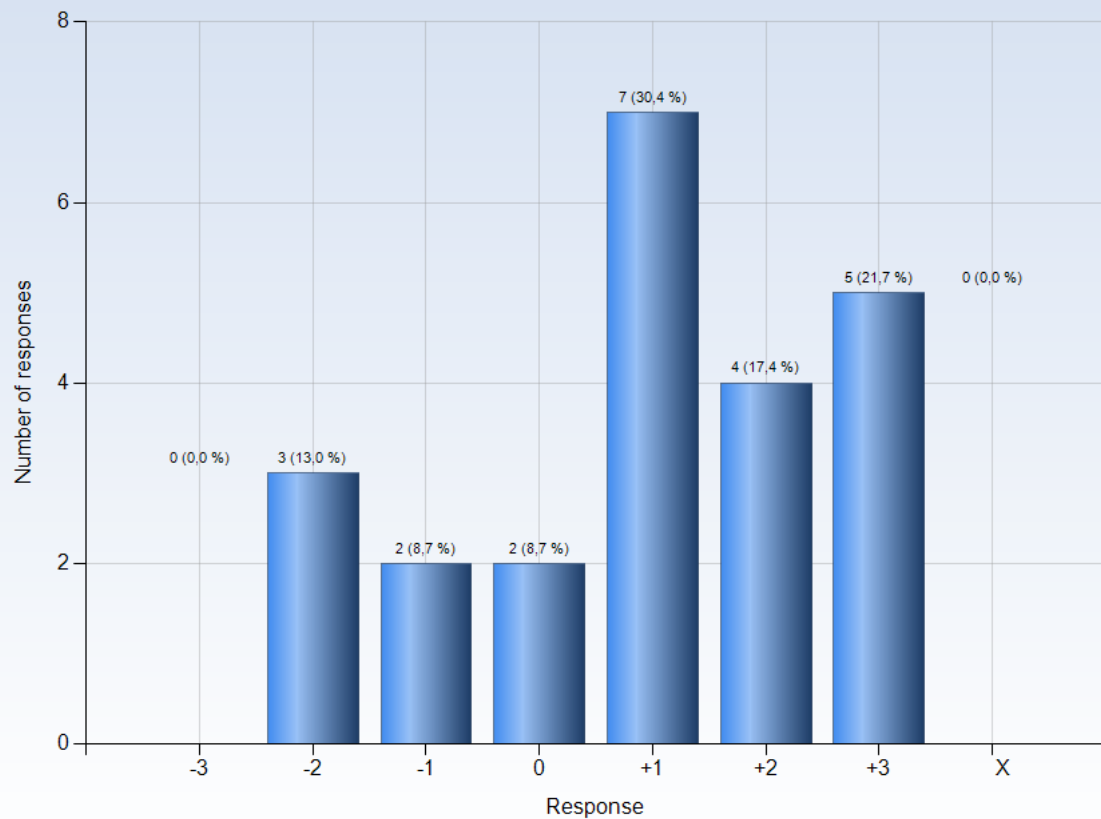
Comments

Comments (My response was: -2)
Initiating contact with people is not my strong side

Comments (My response was: -1)
Sometimes i felt left out because all the lectures were interconnected and i took time to understand certain key concepts.. The lecture speed can be reduced.

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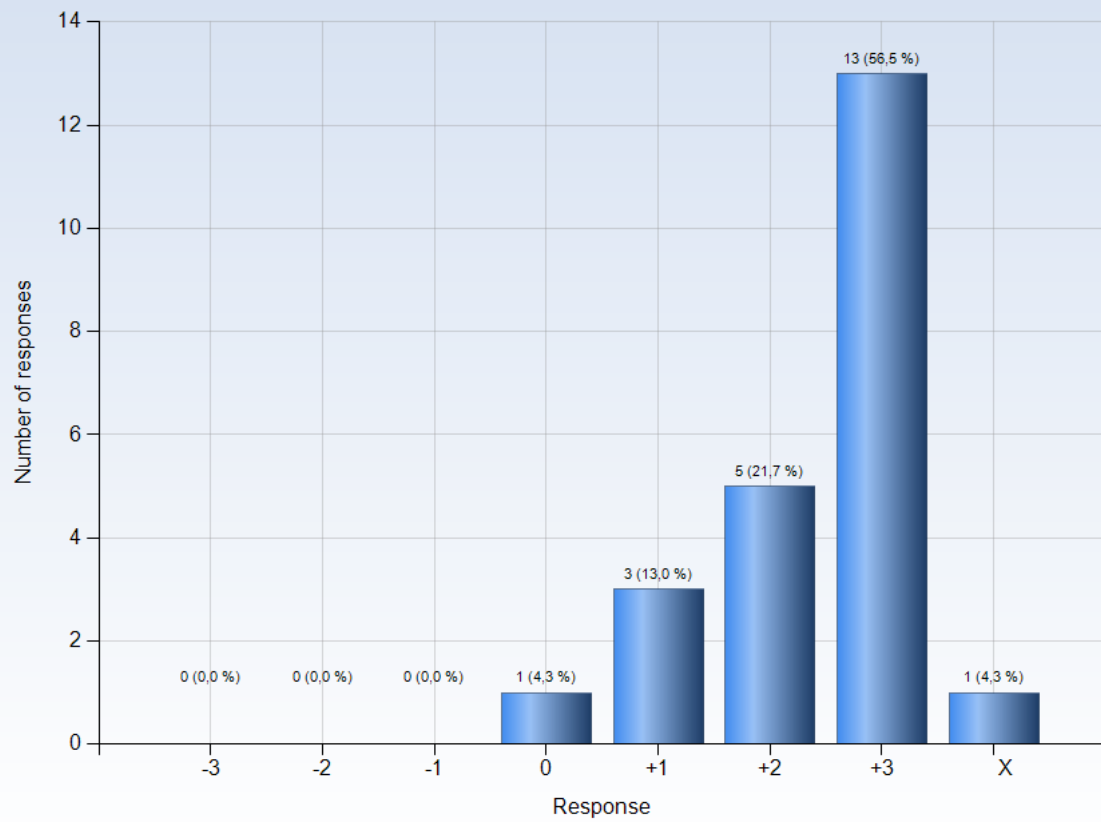
Comments

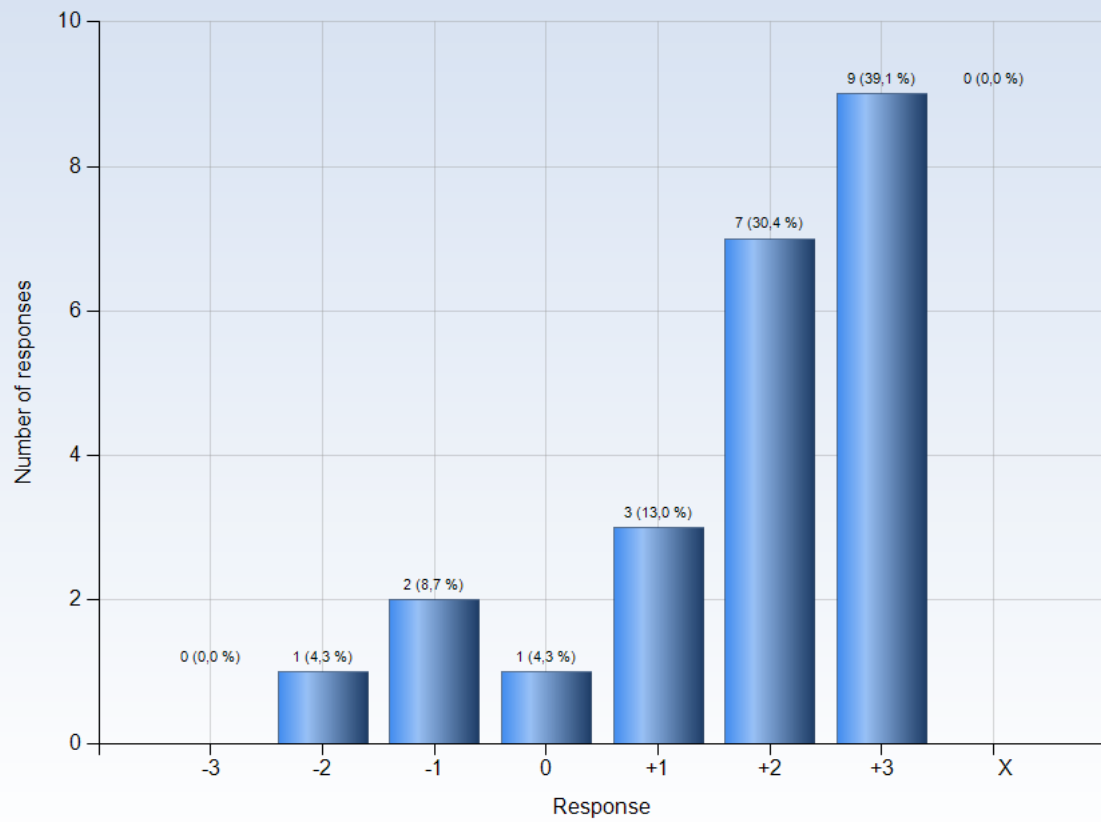## 7. The intended learning outcomes helped me to understand what I was expected to achieve
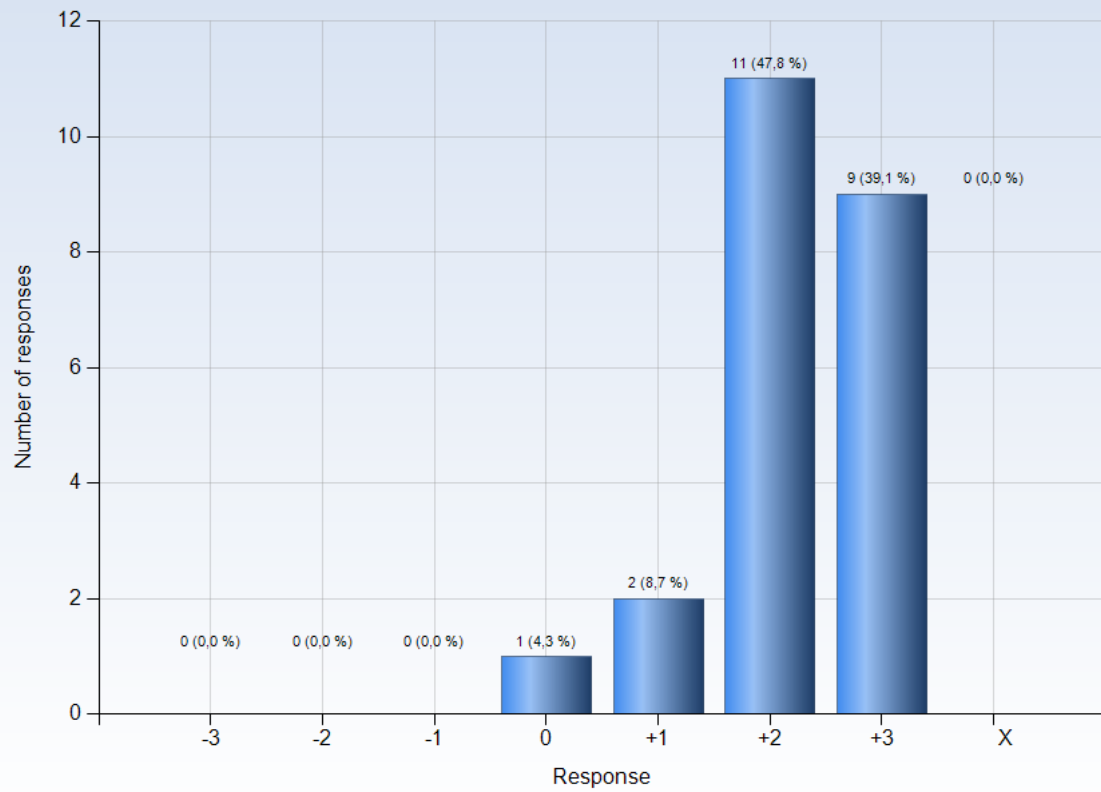
Comments

8. I understood how the course was organized and what I was expected to do
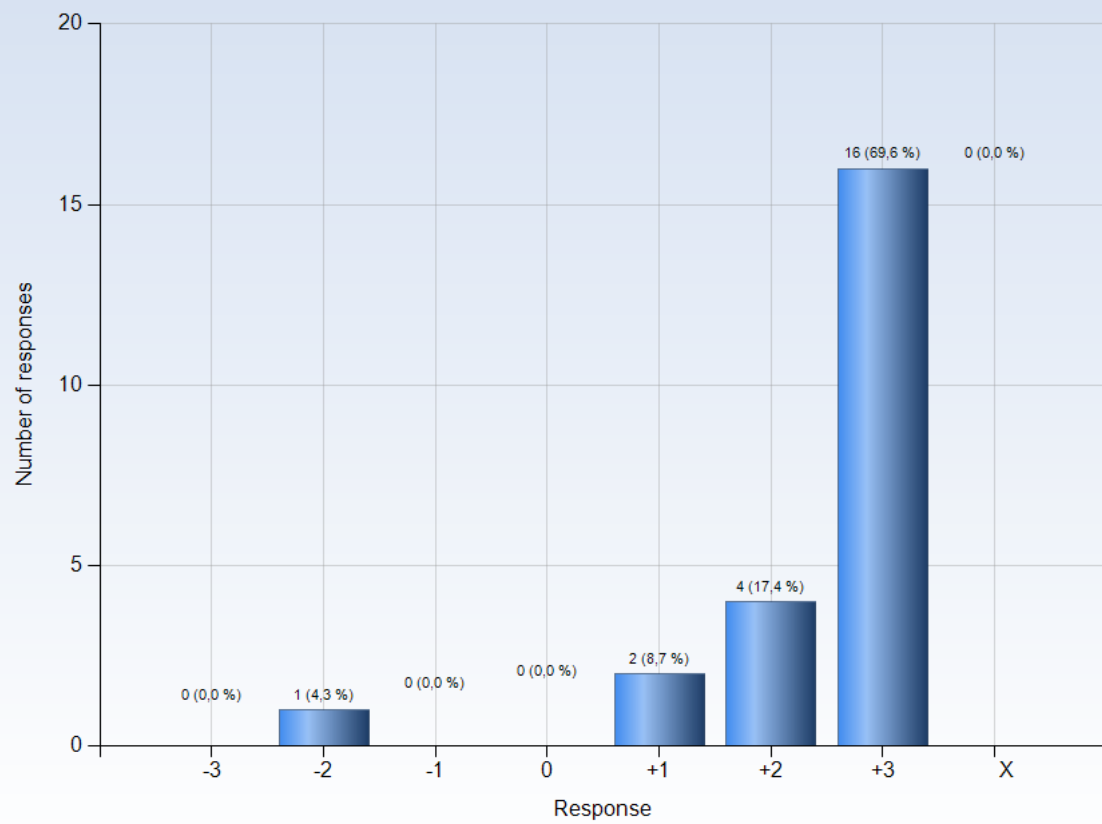
Comments
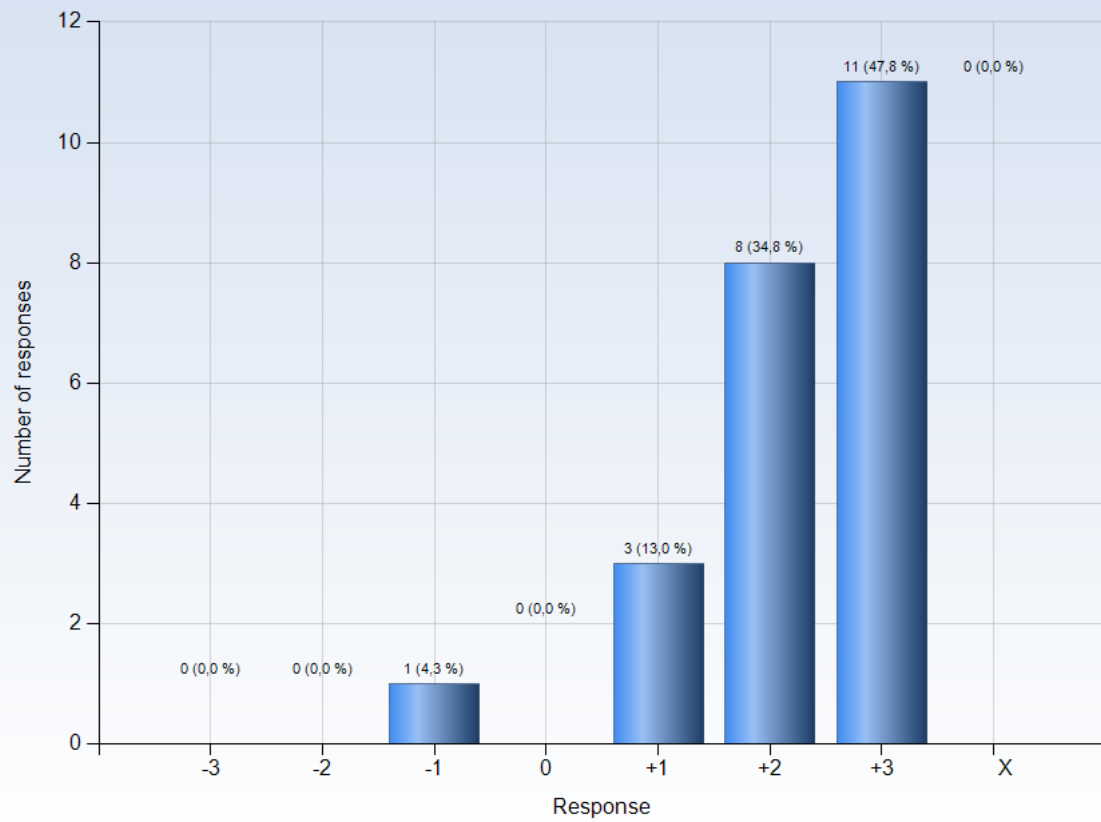
9. I understood what the teachers were talking about

Comments

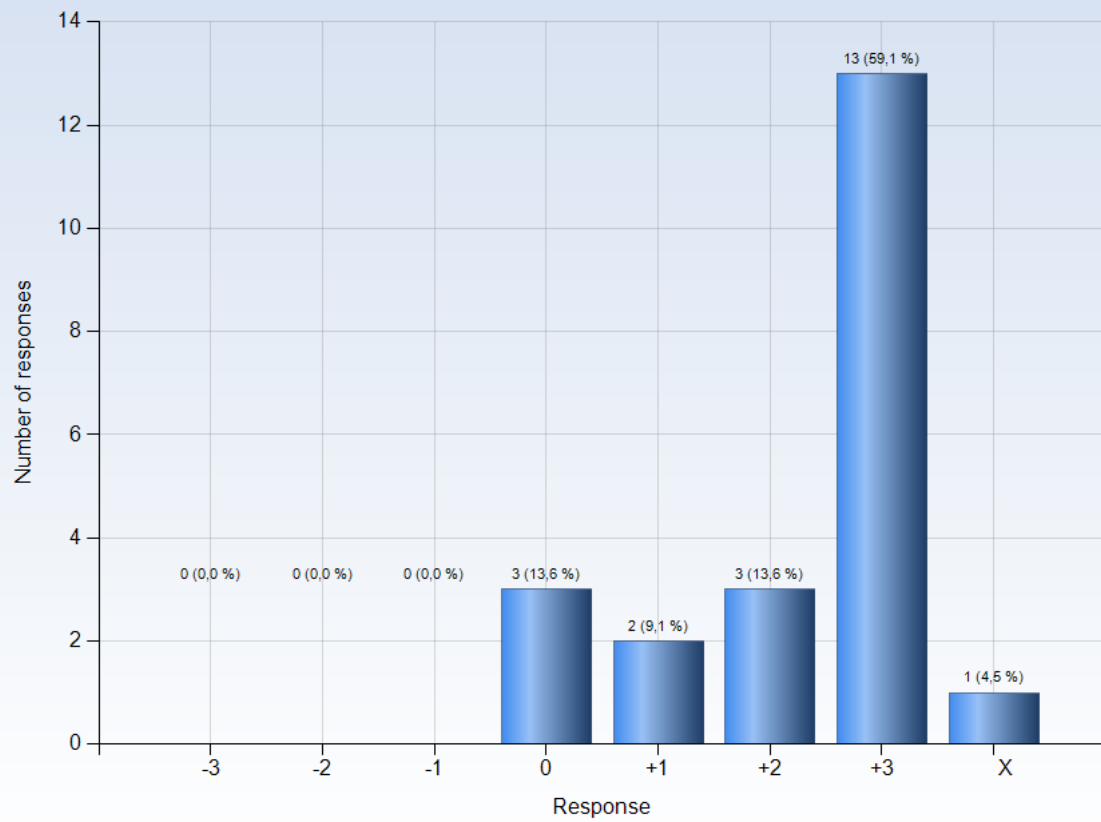| Comments (My response was: 0) |
| --- |
| Not always. Due to difficulty in keeping pace with lectures sometimes. |

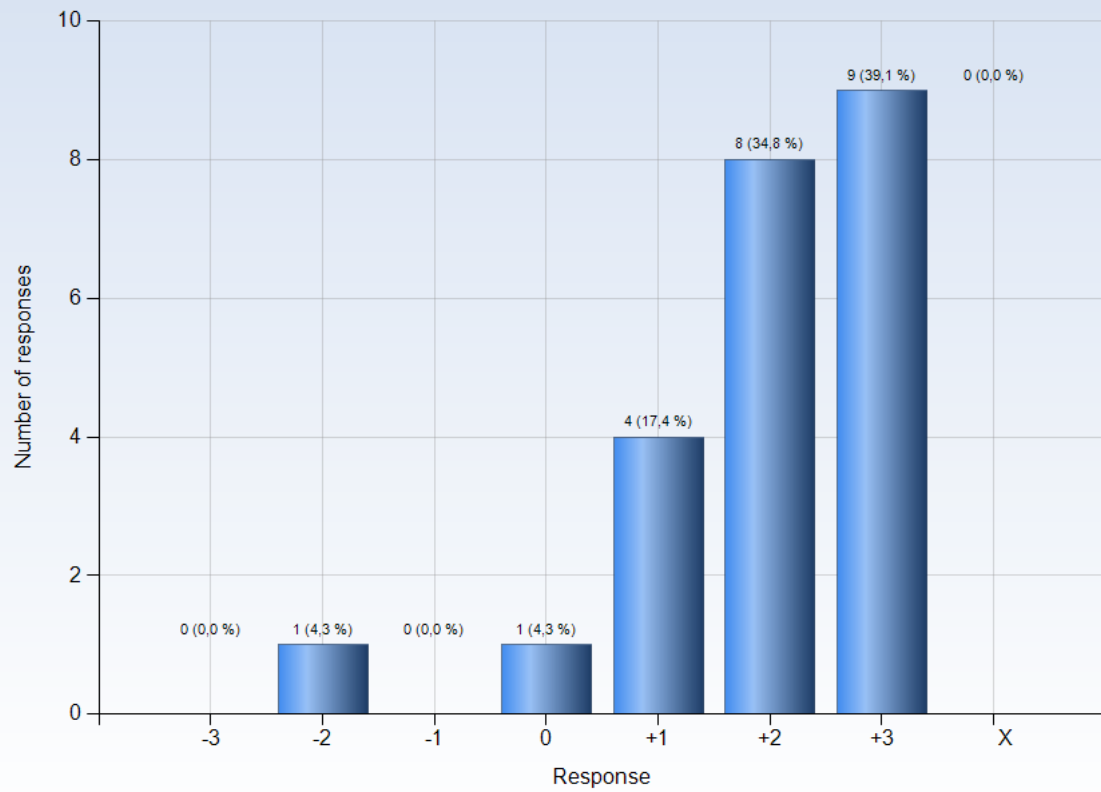## 10. I was able to learn from concrete examples that I could relate to

Comments

11. Understanding of key concepts had high priority

Number of responses:
- -3: 0 (0,0 %)
- -2: 0 (0,0 %)
- -1: 0 (0,0 %)
- 0: 3 (13,6 %)
- +1: 2 (9,1 %)
- +2: 3 (13,6 %)
- +3: 13 (59,1 %)
- X: 1 (4,5 %)

Comments

Comments (My response was: X   )
I don't understand the question

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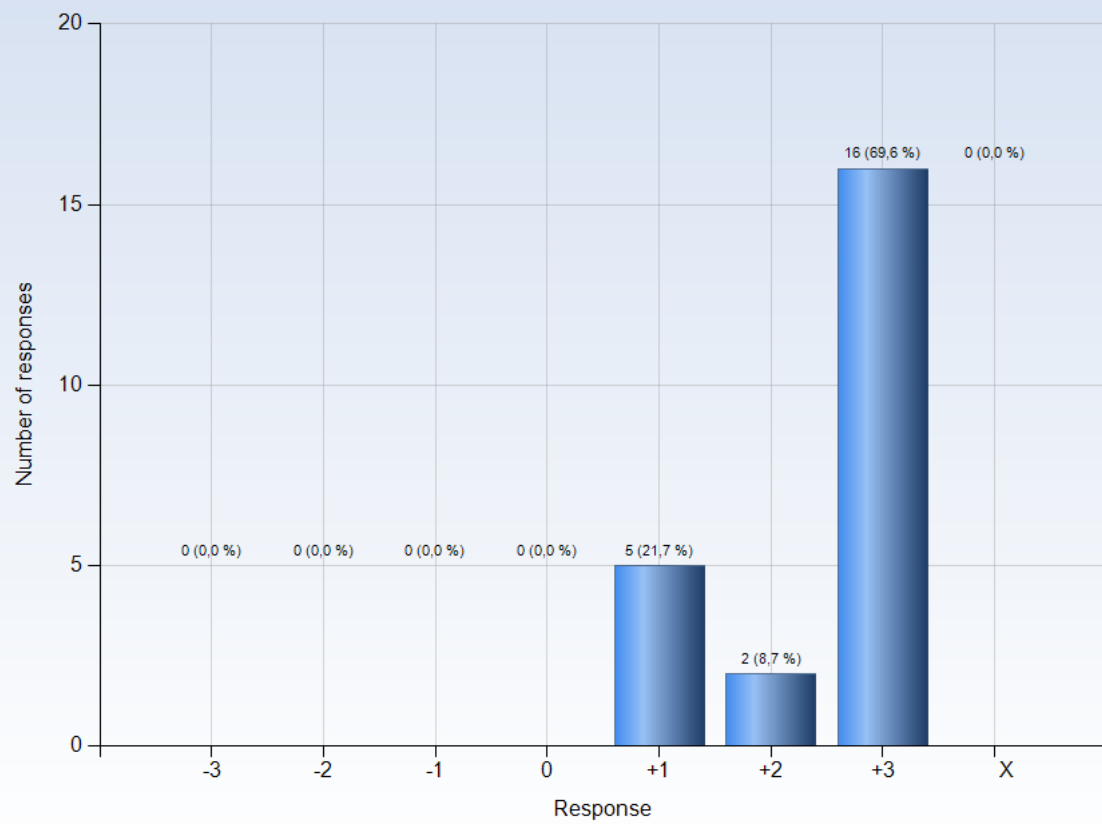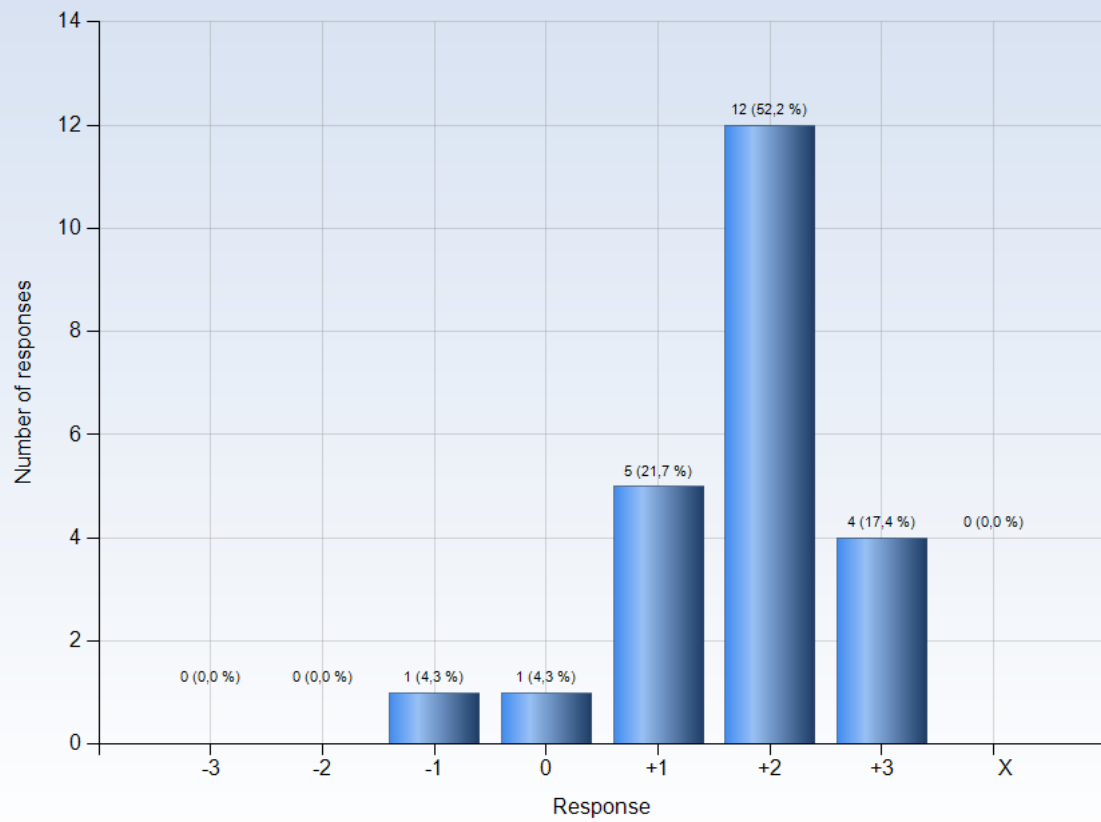

Comments

(My response was: +3)

Det gjorde visst det. Övningarna som vi fick göra hjälpte mig mycket för att förstå de delarna i kursen som de täckte. Grymt!

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

Number of responses

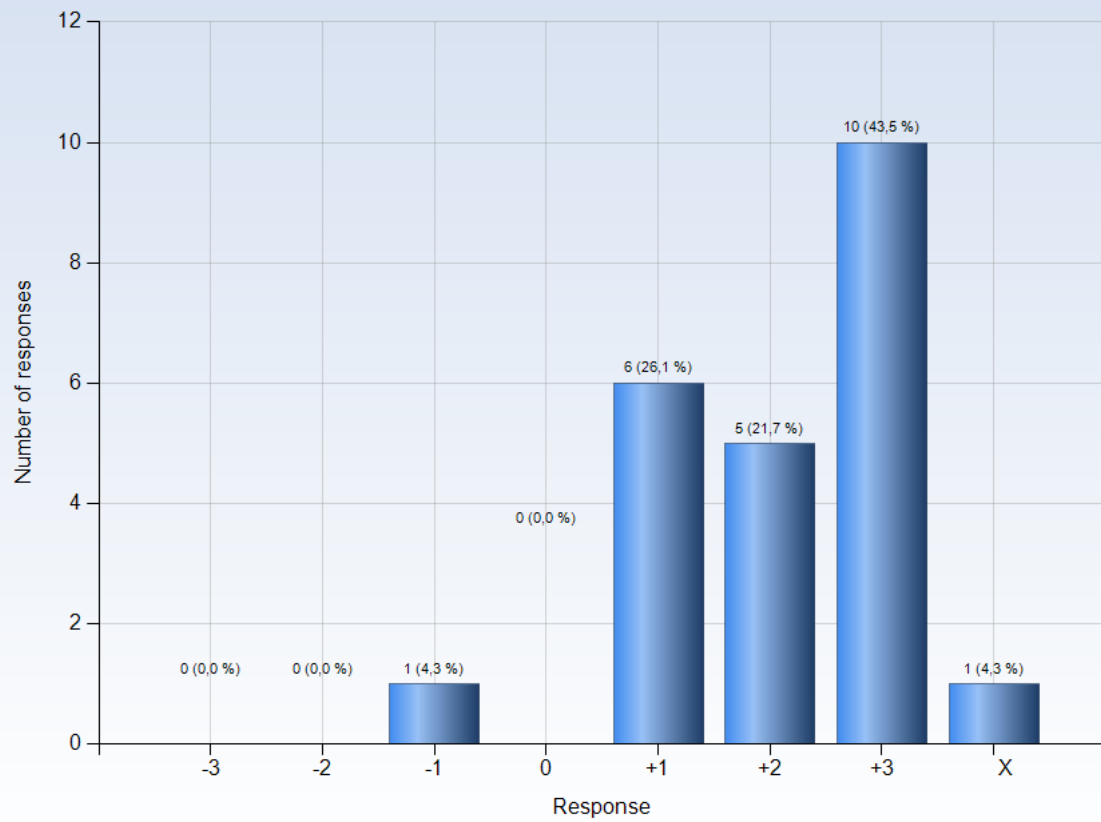| Response	Count
-3	0 (0,0 %)
-2	0 (0,0 %)
-1	1 (4,3 %)
0	1 (4,3 %)
+1	5 (21,7 %)
+2	12 (52,2 %)
+3	4 (17,4 %)
X	0 (0,0 %)

Response

Comments

Comments (My response was: +2)
Assignments and tutorials were really helpful to show my understanding.

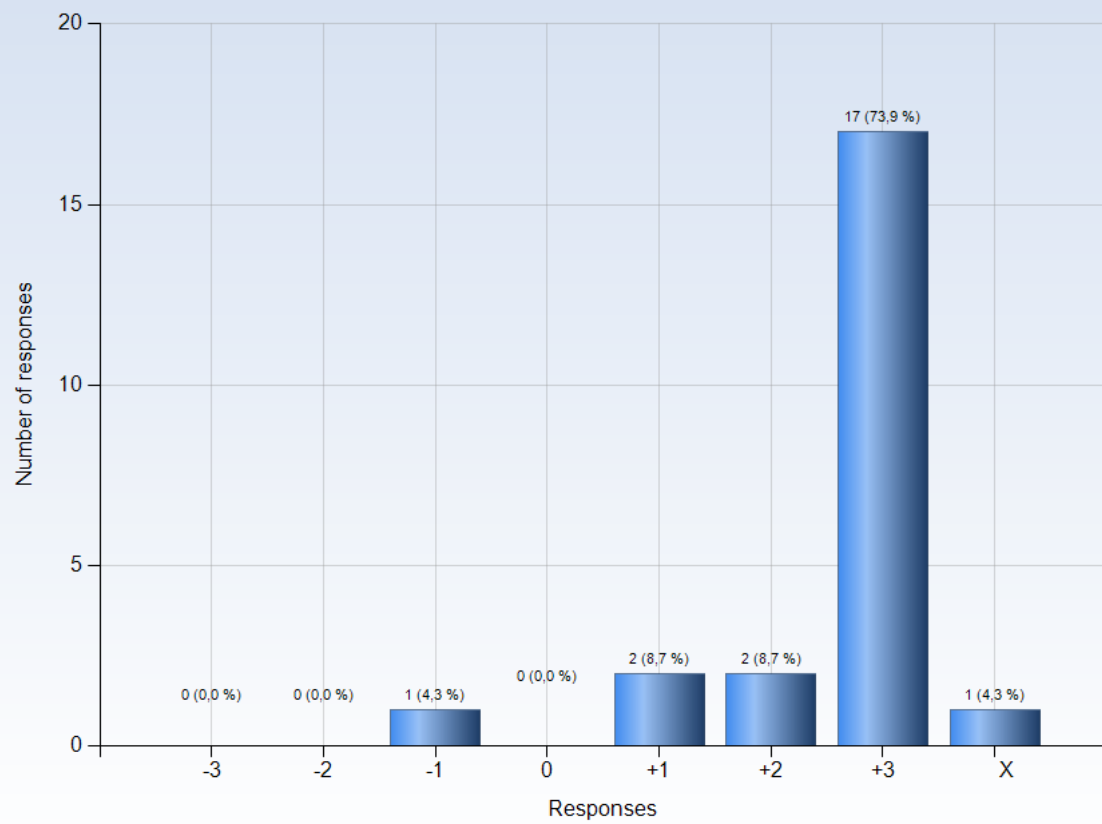## 15. I could practice and receive feedback without being graded

Number of responses

Response	Count
-3	0 (0,0 %)
-2	0 (0,0 %)
-1	1 (4,3 %)
0	0 (0,0 %)
+1	6 (26,1 %)
+2	5 (21,7 %)
+3	10 (43,5 %)
X	1 (4,3 %)

Comments

Comments (My response was: +3)

Tutorial sessions were great for this.

16. The assessment on the course was fair and honest

Number of responses

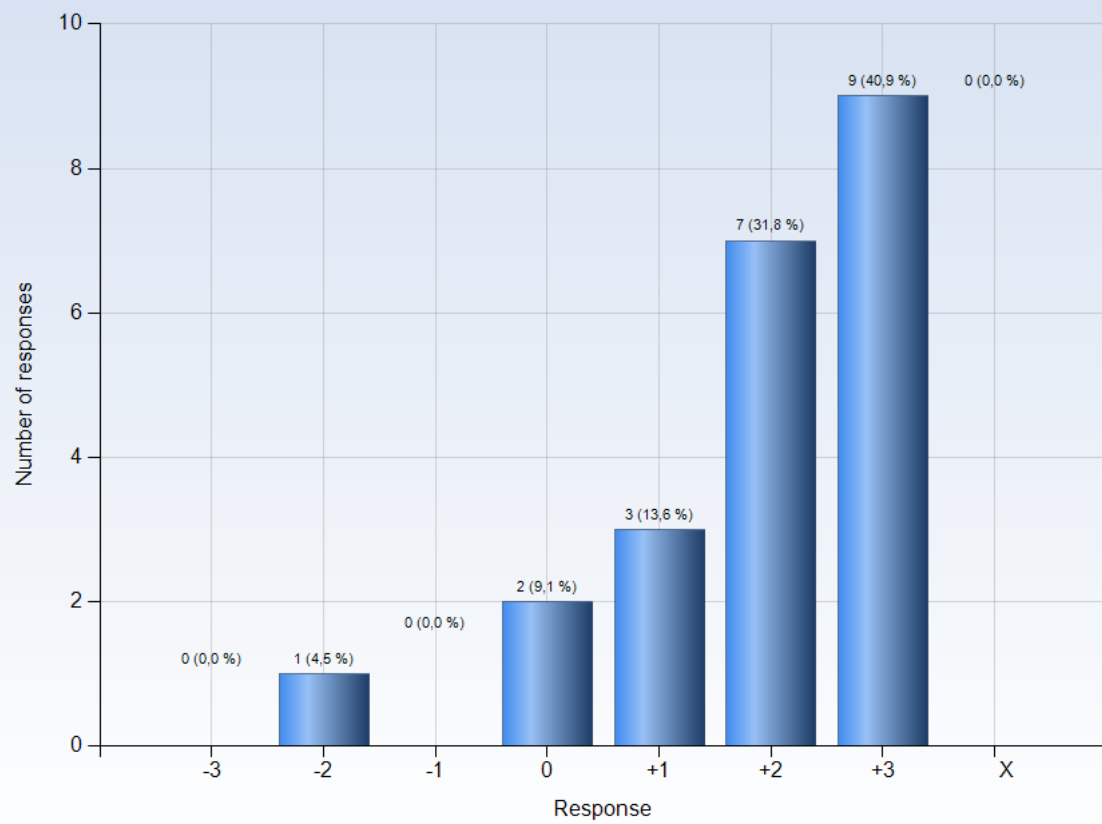| -3	-2	-1	0	+1	+2	+3	X
0 (0,0 %)	0 (0,0 %)	1 (4,3 %)	0 (0,0 %)	2 (8,7 %)	2 (8,7 %)	17 (73,9 %)	1 (4,3 %)

Responses

Comments

Comments (My response was: +3)

På alla sätt o vis.

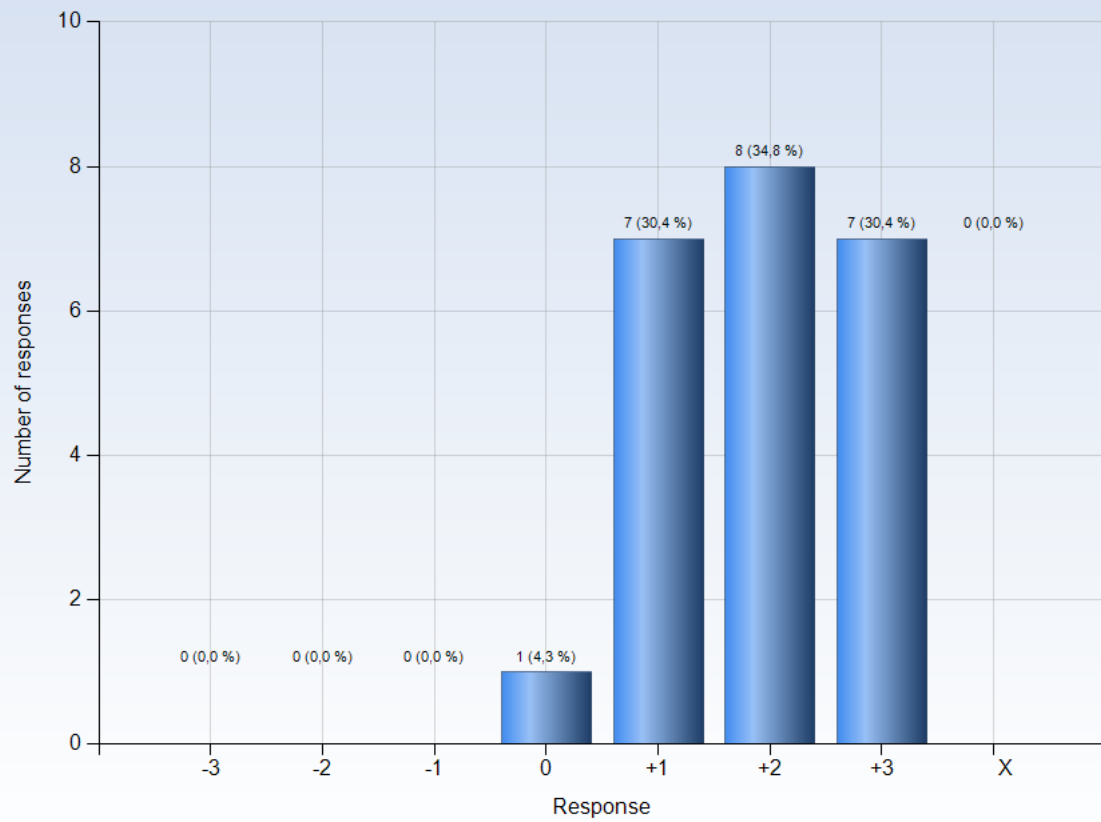## 17. My background knowledge was sufficient to follow the course

Comments

Comments (My response was: 0)

It was initially difficult to understand as I had not attended any courses previously with so much of computer science terminologies. But I could catch up soon.
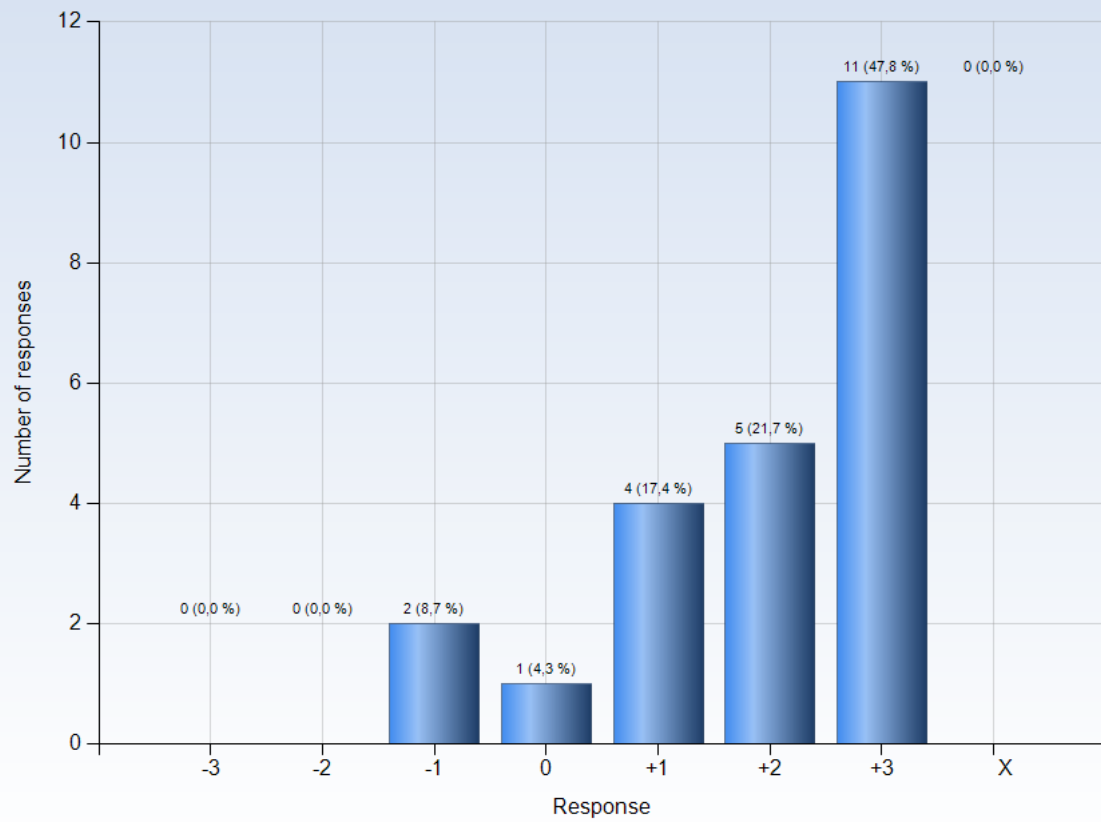
18. I regularly spent time to reflect on what I learned

Comments

Comments (My response was: +1)

Tried to keep pace with lectures as much as possible

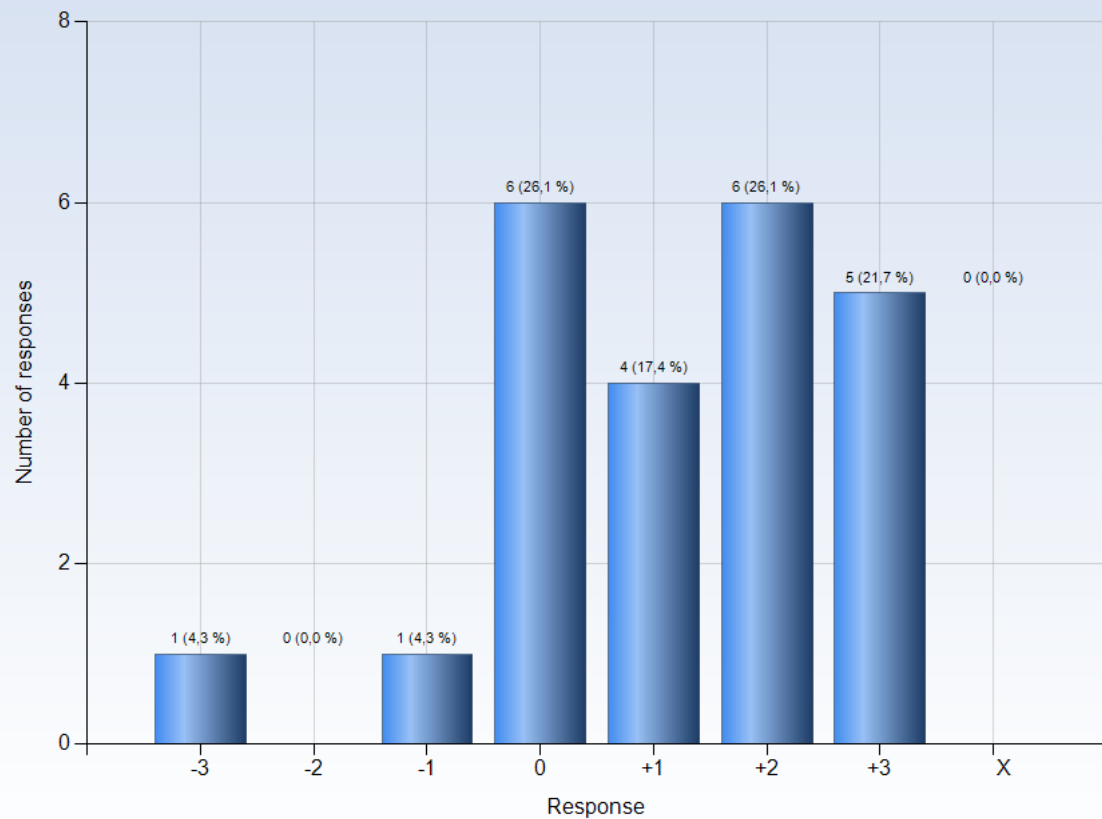# 19. I was able to learn in a way that suited me

Comments

Comments (My response was: -1)
Practical labs tend to motivate me more

Comments (My response was: 0)
I enjoy more practical way of learning than just theory.

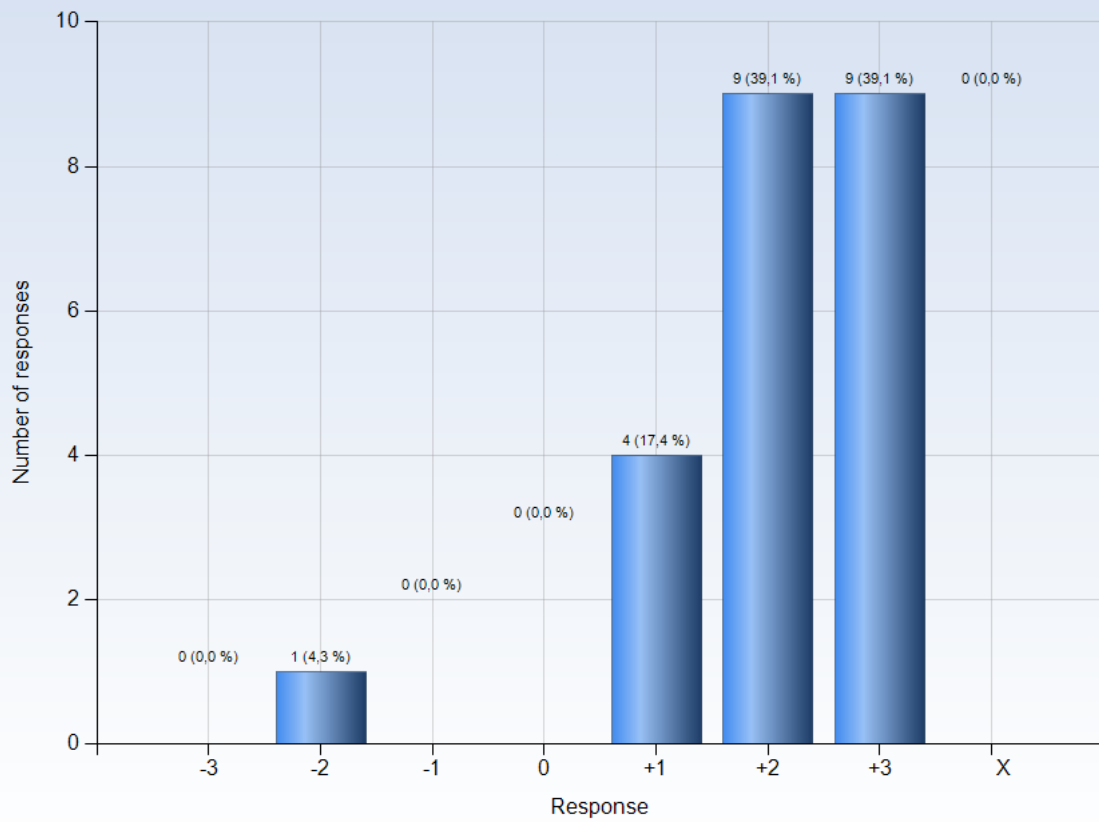## 20. I had opportunities to choose what to do

Comments

Comments (My response was: 0)

Not sure what this question is about

Comments (My response was: +3)

Free to the extent that there no constraint on mode of submissions , scanned submissions were accepted. This reduced a lot of editing time on laptop.

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

Number of responses (y-axis) vs **Response** (x-axis)

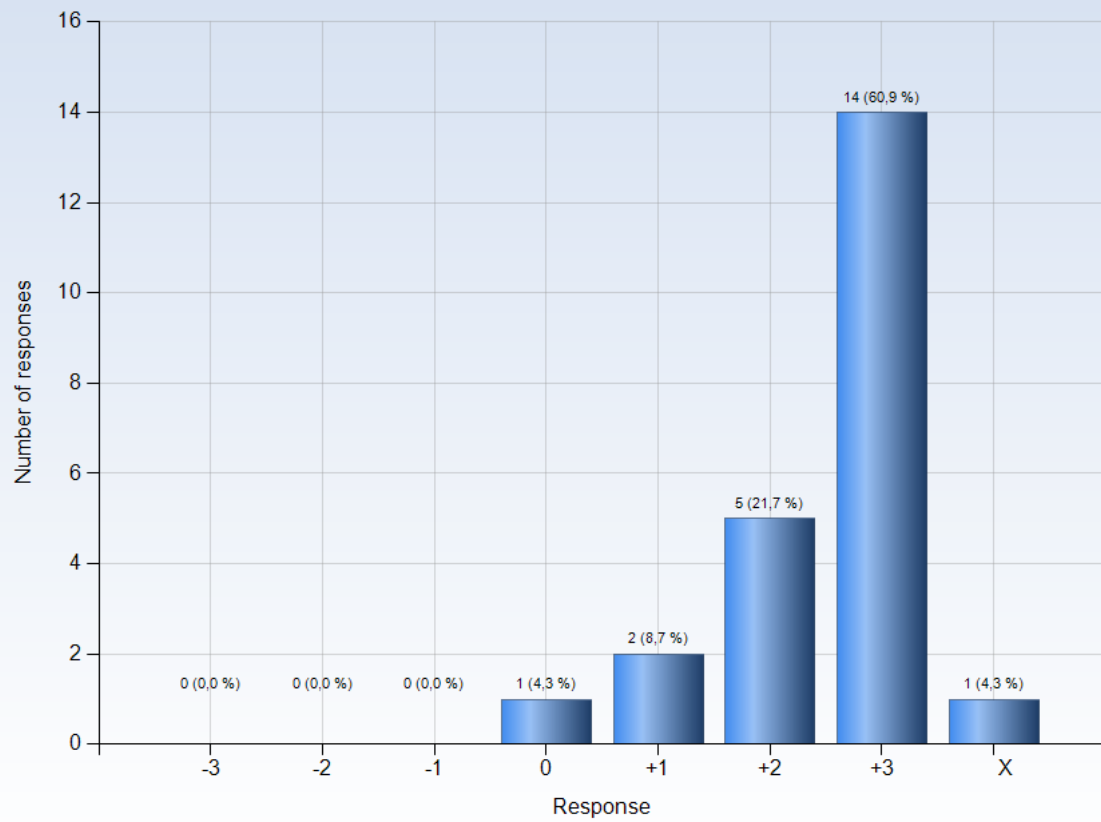| Response	-3	-2	-1	0	+1	+2	+3	X
Count (%)	0 (0,0 %)	1 (4,3 %)	0 (0,0 %)	0 (0,0 %)	4 (17,4 %)	9 (39,1 %)	9 (39,1 %)	0 (0,0 %)

Comments

Comments (My response was: -2)

The homework assignments did not have a collaborative nature for me. They more had the form of "Hey I did everything, do you have anything to add?". Therefore I had to do them alone and thus collaboration was a bit dull.

Comments (My response was: +3)

Group assignments were great for this.

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

Comments