Kursanalys

Kurstitel: System- och livscykelanalys	
Kurskod: BB2570	Högskolepoäng: 7,5
Kursen ingår i programmet: Master i Bioteknologi	
Termin: HT2020	Läsperiod: II
Kursansvarig: Ines Ezcurra	Examinator: Ines Ezcurra
Antal registrerade studenter: 42	Antal godkända vid sista kursdatum: 41
Svarsfrekvens kursvärderingsenkät (%): 35%	

1. Beskrivning av genomförda förändringar till detta kurstillfälle

BB2570 är en helt ny kurs, som startade 2018 och gavs under tillfället för tredje gången. Kursen är därför under utveckling. Kursen drivs av en kursansvarig och ett team av externa lärare från ABE skolan plus några lärare från CBH skolan (BIO ämnet). Under 2019 gjordes en kursenkät av LEQ typ som analyserades av kursansvarig, eftersom väldigt få studenter hade svarat på LEQ enkäten. Kursassistenter rekryterades för att hjälpa till med datorlaborationen och lcopt programmet, efter analys av synpunkter i LEQ enkäten. Den kvantitativa analysen visade förbättringar i studenternas respons i LEQ värdering (Bilaga 1).

2. Sammanfattning av studenternas kursvärderingar

(Baserad på studenternas kvantitativa svar på kursvärderingen LEQ och synpunkter ur fritextsvar beskriv studenternas upplevelse av måluppfyllelse, kursinnehållet, kursorganisationen, arbetsbelastningen och examinationen. Kvantitativ sammanställning och grafer kan bifogas i bilaga.)

Arbetsinsats: Ca hälften av de svarande arbetade 15-23 h/vecka, enligt förväntan, Resten arbetade kortare tid, dvs lägre arbetsinsatsen (i tid) än förväntad. Det är möjligt att tentamen efter jullovet gör att studenter pluggar under jullovet vilket minskar arbetsinsatsen under ordinarie kurstid.

Genusfrågor: Inga problem framgår av materialet.

Studenttyp: Skillnad i förkunskaper mellan svenska och internationella studenter.

Specifika LEQ frågor   (obs 12 frågor LEQ)

Positiva upplevelser: Intressanta föreläsningar, samarbete och diskussioner, konkreta exempel och nyckelbegrepp i undervisningen.

Negativa upplevelser:

Mera övningar och mera support önskades.

Fria kommentarer

Positiva upplevelser: Intressant och viktig kurs. Projektet lärorikt. Datorlab och lcopt var bra.

Negativa upplevelser:

Avsaknad av övningar inför tentamen. Mera stöd med lcopt efterfrågades av några. Avsaknad av konkreta exempel under föreläsningar, och av biotech under föreläsningar (svårt eftersom lärarna är från ABE skolan). Föreläsning Systemanalys och systemtänkande alltför abstrakta. Under tentamen, bedömning av vissa frågor kändes godtycklig.

3. Reflektioner kring kursens genomförande och resultat

a. Kursens styrkor: Ämnet

Ämnet – Projektarbete – Grupparbete – Hållbarhet

b. Kursens svagheter:

Avsaknad av övningsfrågor inför tentamen. Alltför många lärare från annan skola, svårt att skapa lärarteam, teamanda & kommunikation (kursansvarigs uppfattning)

4. Förslag till förändringar för kommande kurstillfälle

1) Fortsätt med att anlita studenter från tidigare år som Icopt assistenter. Det hjälpte oerhört mycket!
2) Diskutera föreläsningar och examensfrågor med berörda lärare
3) Skapa flera schemalagda aktiviteter, t ex övningar och frågor rättade av studenterna själva med peer assessment. Ytterligare en föreläsning om bioteknologi och hållbarhet håller på att utvecklas av kursansvarig.

Dessa förslag kommer att diskuteras under möte med alla lärare under vår 2021 (april/maj). Alla uppkomna problem kommer att diskuteras och åtgärdas.

5. Övriga synpunkter

Results BB2570-2020 home exam
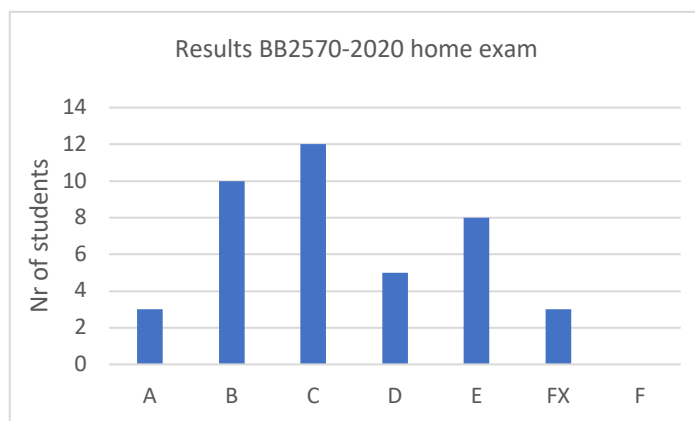
Bilagor:

1. Kursanalys BB2570
2. LEQ enkät BB2570 2020

Kursanalys

Kurstitel: System- och livscykelanalys	
Kurskod: BB2570	**Högskolepoäng: 7,5**
Kursen ingår i programmet: Master i Bioteknologi	
Termin: HT2020	**Läsperiod: II**
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Antal registrerade studenter: 42	**Antal godkända vid sista kursdatum: 41**
Svarsfrekvens kursvärderingsenkät (%): 35%	

1. **Beskrivning av genomförda förändringar till detta kurstillfälle**

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2. **Sammanfattning av studenternas kursvärderingar**

    (Baserad på studenternas kvantitativa svar på kursvärderingen LEQ och synpunkter ur fritextsvar beskriv studenternas upplevelse av måluppfyllelse, kursinnehållet, kursorganisationen, arbetsbelastningen och examinationen. Kvantitativ sammanställning och grafer kan bifogas i bilaga.)

    Arbetsinsats: Ca hälften av de svarande arbetade 15-23 h/vecka, enligt förväntan, Resten arbetade kortare tid, dvs lägre arbetsinsatsen (i tid) än förväntad. Det är möjligt att tentamen efter jullovet gör att studenter pluggar under jullovet vilket minskar arbetsinsatsen under ordinarie kurstid.

    Genusfrågor: Inga problem framgår av materialet.

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    Specifika LEQ frågor   (obs 12 frågor LEQ)

    Positiva upplevelser: Intressanta föreläsningar, samarbete och diskussioner, konkreta exempel och nyckelbegrepp i undervisningen.

    Negativa upplevelser:

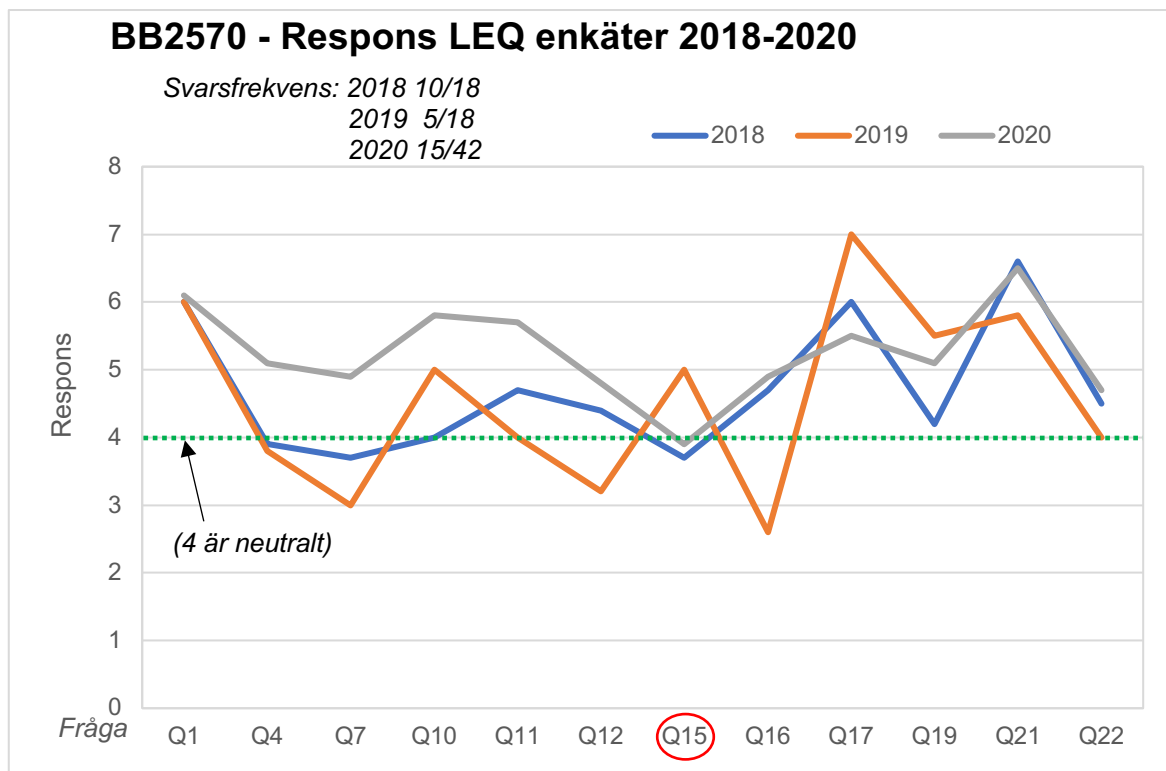   Mera övningar och mera support önskades.

    Fria kommentarer

    Positiva upplevelser: Intressant och viktig kurs. Projektet lärorikt. Datorlab och lcopt var bra.

    Negativa upplevelser:

    Avsaknad av övningar inför tentamen. Mera stöd med lcopt efterfrågades av några. Avsaknad av konkreta exempel under föreläsningar, och av biotech under föreläsningar (svårt eftersom lärarna är från ABE skolan). Föreläsning Systemanalys och systemtänkande alltför abstrakta. Under tentamen, bedömning av vissa frågor kändes godtycklig.

3. **Reflektioner kring kursens genomförande och resultat**

BB2570 - Respons LEQ enkäter 2018-2020

Svarsfrekvens: 2018 10/18
2019 5/18
2020 15/42

Tabell: Respons på LEQ frågor under 2018 - 2020

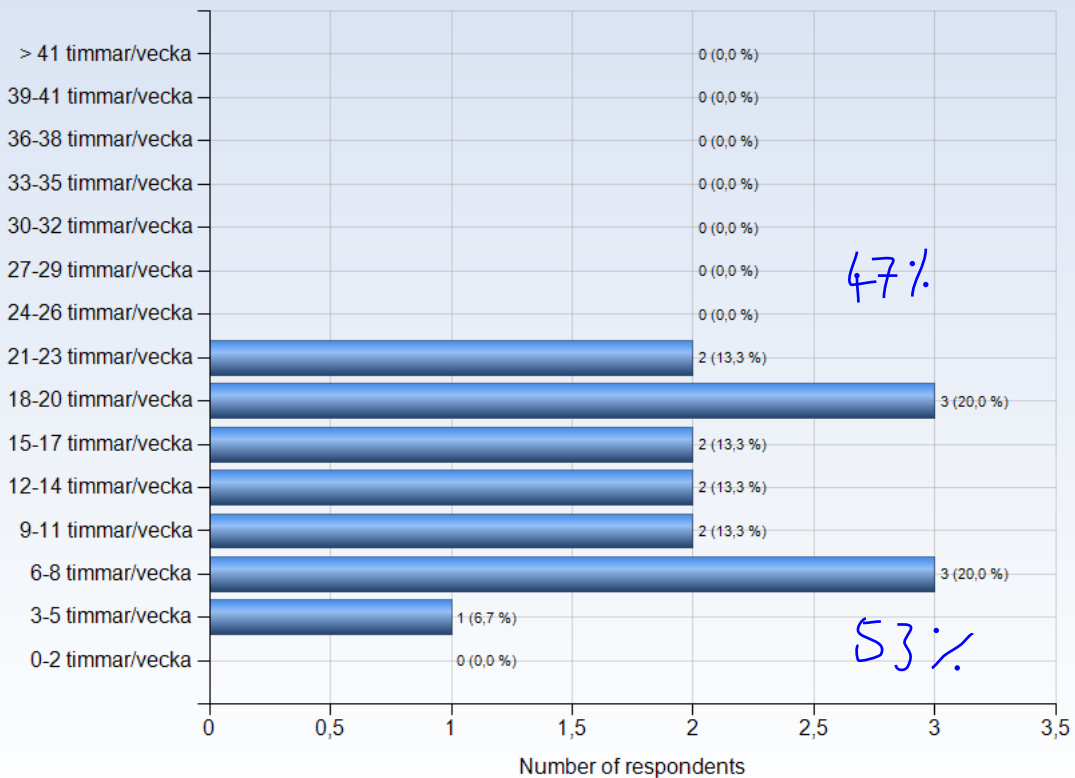| LEQ frågor	2018	2019	2020
1. Jag arbetade med intressanta frågeställningar	6	6	6,1
2. Kursen kändes utmanande på ett stimulerande sätt	3,9	3,8	5,1
3. Lärandemålen hjälpte mig att förstå vad jag förväntades kunna efter kursen	3,7	3	4,9
4. Jag kunde lära mig av konkreta exempel som jag kunde relatera till	4	5	5,8
5. Förståelse av centrala begrepp hade hög prioritet	4,7	4	5,7
6. Kursens aktiviteter hjälpte mig att nå lärandemålen på ett effektivt sätt	4,4	3,2	4,8
7. Jag kunde öva och få feedback utan att någon betygsättning gjordes	3,7	5	3,9
8. Kursens examination kändes ärlig och rättvis	4,7	2,6	4,9
9. Mina tidigare kunskaper var tillräckliga för att följa kursen	6	7	5,5
10. Kursens aktiviteter gjorde det möjligt för mig att lära på olika sätt	4,2	5,5	5,1
11. Jag kunde lära mig genom att samarbeta och diskutera med andra	6,6	5,8	6,5
12. Jag kunde få stöd om jag behövde det	4,5	4	4,7
Medelrespons	4,6	4,7	5,3
Svarsfrekvens	10/18	5/18	15/42

Styrkor ■   Svagheter ■

BB2570 - 2021-02-04

Antal respondenter: 43
Antal svar: 15
Svarsfrekvens: 34,88 %

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	0 (0,0 %)
21-23 timmar/vecka	2 (13,3 %)
18-20 timmar/vecka	3 (20,0 %)
15-17 timmar/vecka	2 (13,3 %)
12-14 timmar/vecka	2 (13,3 %)
9-11 timmar/vecka	2 (13,3 %)
6-8 timmar/vecka	3 (20,0 %)
3-5 timmar/vecka	1 (6,7 %)
0-2 timmar/vecka	0 (0,0 %)

Number of respondents

(handwritten annotations: 47 % and 53 %)

Comments

Comments (I worked: 3-5 timmar/vecka)
This is an interesting course. But required a lot of studying also

Comments (I worked: 9-11 timmar/vecka)
Since the lectures were recorded you could rewatch them on 2x speed when studying

Comments (I worked: 18-20 timmar/vecka)
As a broad, I understand the idea. But reading it as a subject was different and difficult. Even the book suggested, the language I found quite abstract to anticipate. It is a great subject to infuse the understanding and concept within student. But Examination methods would have been much better as a group discussion or debate, rather than regular courses. Because, it is far from a regular subject. It is a concept and way of being.

The group project was good and enriching.

Comments (I worked: 21-23 timmar/vecka)
A lot of time were put on the project and thus the exam studies were down prioritized.

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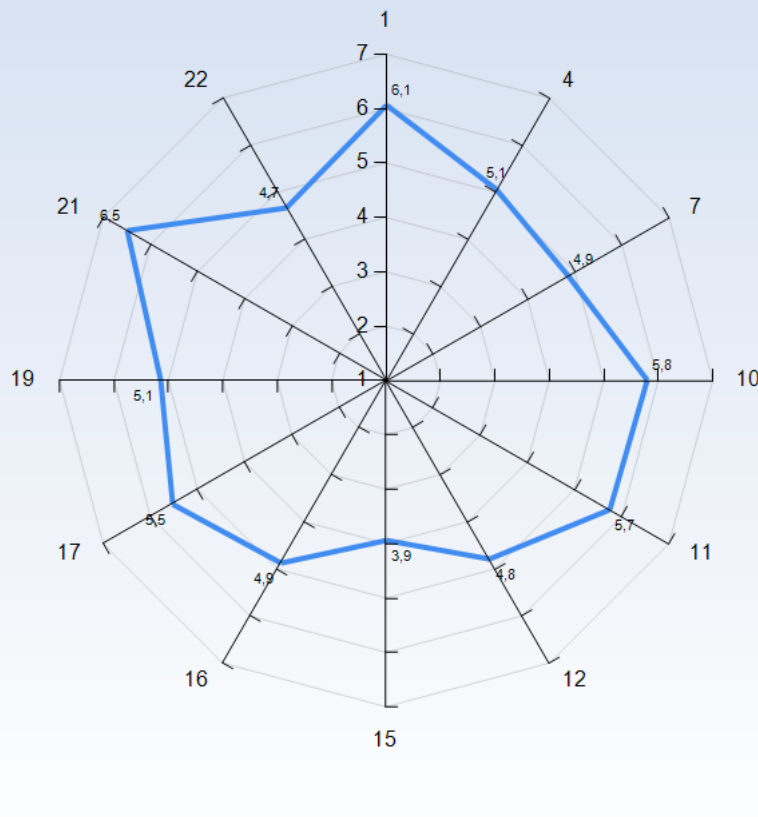
1 = No, I strongly disagree with the statement
4 = I am neutral to the statement
7 = Yes, I strongly agree with the statement

Note! A group has to include at least 3 respondents in order to appear in a diagram.

Average response to LEQ statements - all respondents

1. I worked with interesting issues
4. The course was challenging in a stimulating way
7. The intended learning outcomes helped me to understand what I was expected to achieve
10. I was able to learn from concrete examples that I could relate to
11. Understanding of key concepts had high priority
12. The course activities helped me to achieve the intended learning outcomes efficiently
15. I could practice and receive feedback without being graded
16. The assessment on the course was fair and honest
17. My background knowledge was sufficient to follow the course
19. The course activities enabled me to learn in different ways
21. I was able to learn by collaborating and discussing with others
22. I was able to get support if I needed it

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.

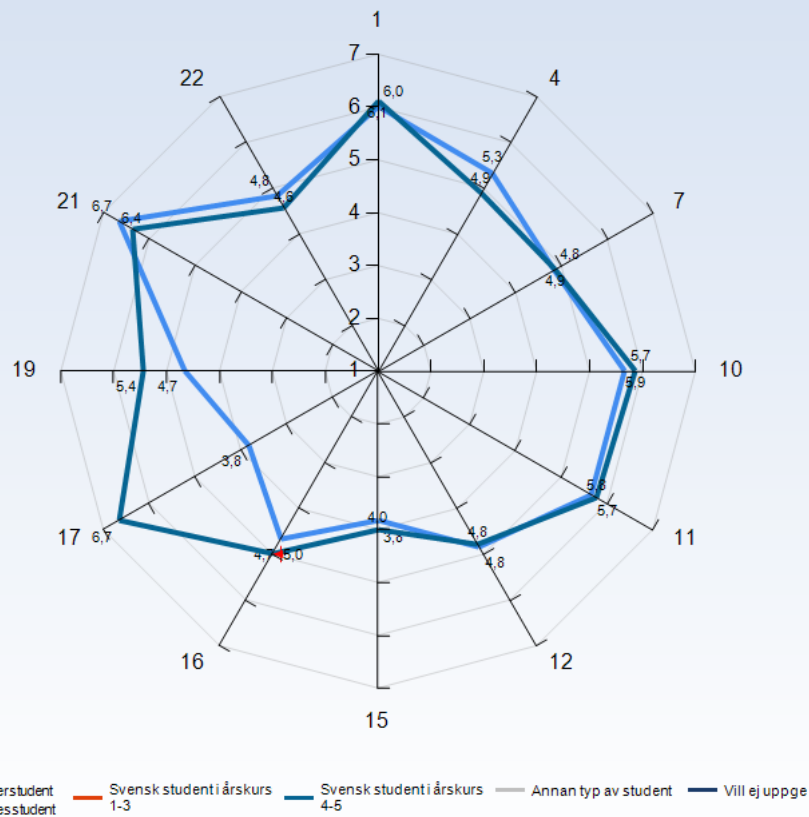Average response to LEQ statements - per gender

Kvinna — Man — Annat — Vill ej uppge
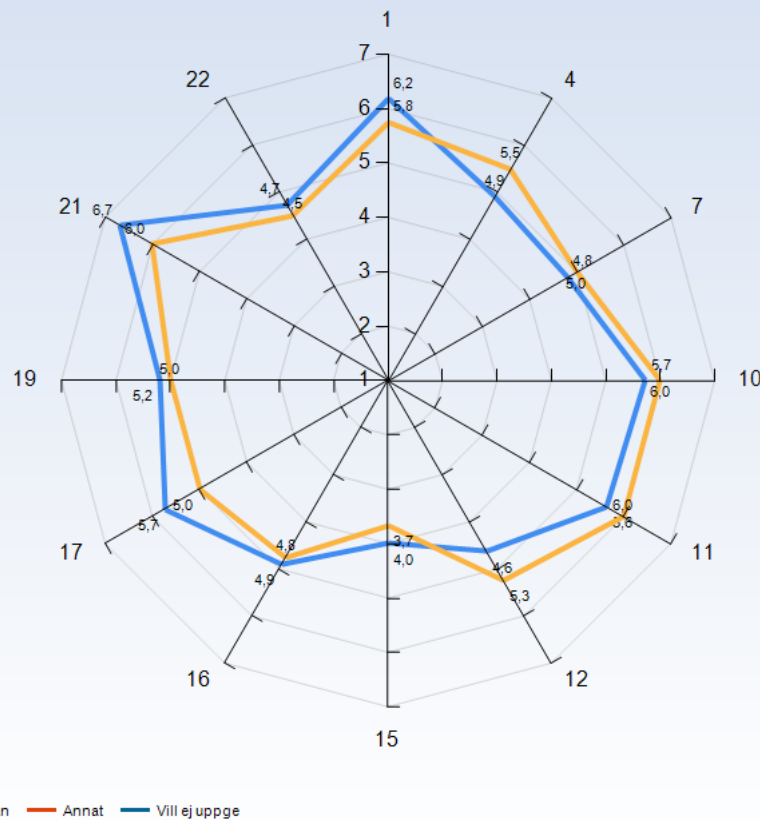
Comments

Comments (I am: Kvinna)
Why would the perspective change due to gender?

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11. Understanding of key concepts had high priority
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17. My background knowledge was sufficient to follow the course
19. The course activities enabled me to learn in different ways
21. I was able to learn by collaborating and discussing with others
22. I was able to get support if I needed it

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
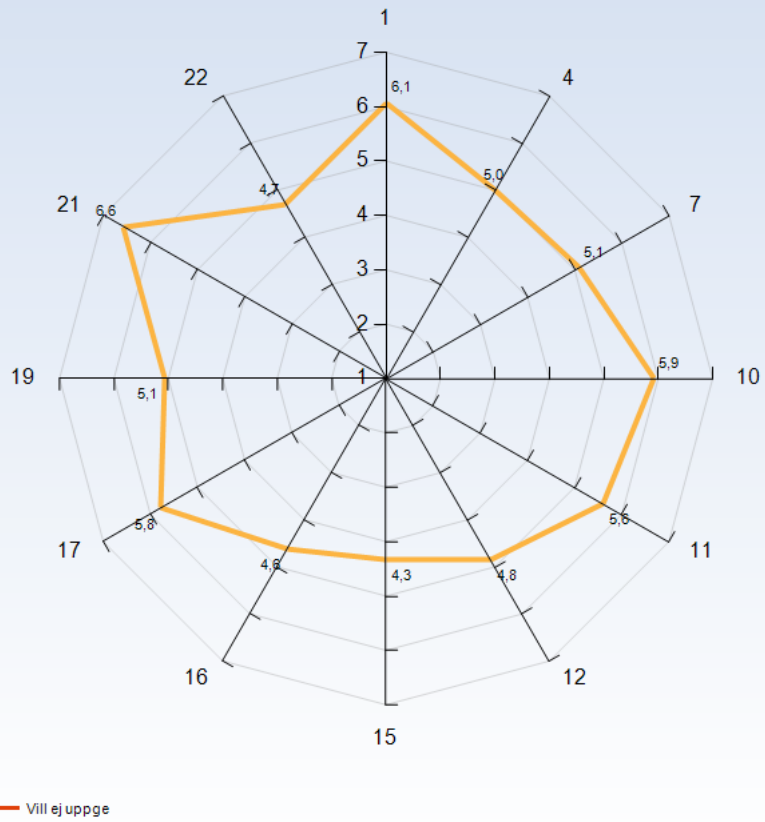
Comments

Comments (I am: Svensk student i årskurs 4-5)
Maybe I had an advantage since the LCA concept has been introduced in previous classes at KTH

1. I worked with interesting issues
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Average response to LEQ statements - per disability

Ja — Nej — Vill ej uppge

Comments

Comments (My response was: Nej)

Well, I guess it was easier than if I had had any disability

GENERAL QUESTIONS

What was the best aspect of the course?

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

Group works in the **Project**

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

Different quest lecturers connecting the course to relevant examples taken from real life.

Projektet var **bra och intressant.** Det var dock svårare än vanligt med kommunikation mellan gruppmedlemmarna p.g.a. pandemirestriktionerna då vi inte kunde träffas på plats.

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

The support

Importens subject

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

It was interesting to focus on the **sustainability** aspects and fun to use LCOPT. Interesting lectures and projects.

It had an **open atmosphere** which made it interesting and invited for discussions to be made

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

Group work was challenging and interesting, allowing us to confront a "real life" situation

Interesting topics. The **computer exercises** were good for understanding the **lcopt** program! Our supervisor for the project was very nice and helpful.

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

I think that the **exam** was good. Nice that you get tested on each part of the course.

I had Vaibhav as **project** supervisor and he was extremely helpful and motivated us to create a really good project. He is a great teacher!

The concept.

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

The group **project** was a very engaging process. Thought I did not expect to find all the data on our own.

What would you suggest to improve?

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

It's a relevantly new area. Require more Study material

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

The project work was slightly confusing, the layout and the meetings with supervisors was confusing and what was expected was unclear. The volume of the works was also overwhelming.

Prepare the students for the exam more. Having exercises on those types of questions.

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

The Lcopt software didn't seem to work for a lot of the students which meant that they might not be able to use it. Perhaps it would be useful if they were told/sent a video of the instalaltion steps prior to course start, so that they might have time to adress potential instalaltion issues

My group's mentor for the project work did not help us at all. We got No help What so ever and he/she did not even know What lcopt is. Also, working in lcopt was really hard and the exercises we had before was not enough at all. Would suggest less projekt work time and a lot more tutorials of lcopt. Too much with 15-20 pages per project

It would be good if Ines answered emails too

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

Improve the explanation of system thinking, it felt abstract and was difficult to understand.

While lcopt was a good way to help me learn LCA, it had its drawbacks one of them being that I think it suited some projects more than others (e.g. projects that maybe focused more on agriculture and food production)

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

Course and lessons were good

Some information that was assessed in the lectures was not good enough to understand the concepts. Sometimes, the information was hard to understand and lacked concrete examples or explanation which makes it very hard to apply that knowledge on the exam. It would have been good to have some exercises so that we could learn the concepts practically. The report was good for some concepts but did not cover all aspects of the course. Also, I think it was a bit unfair to only upload 4 previous exam questions to train on for the exam, and especially since none of them had any solutions. In addition, the course teacher did not respond to emails which makes it hard to get help if needed.

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

I think many struggled getting lcopt to work. Maybe more time could be spent trying to help people understand how to download it correctly and be able to run analyses?

Sometimes hard to get answers on emails.

Way of Examination.

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

The lectures about the actual LCA method could be in the scheduled hours instead of recorded lectures.

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)

Have clear concept about the main points

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

Se till att plugga från start då föreläsningarna förhållandevis snabbt gås igenom och kunskaperna från dem behövs i projektet. Se även till att i projektet dela upp arbetsbördorna jämnt och att kommunicera i gruppen så att alla arbetar lika mycket.

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

Follow along on the lectures and engange in the project, they really help with the learning

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

Have a regular communication with the project group. Divide the work-load evenly.

Participate in the discussions

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

Try to understand all of the concepts clearly and think about how things can be applied in different scenarios. The issues can be quite complex, try and discuss scenarios from different point of views.

I don't have any advice. I hardly survived.

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

Expect to gather all the relevant data on your own.

Is there anything else you would like to add?

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

Nope

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)

Format of the exam was good.

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

Really enjoyed the class and considering everything, it was well executed.

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

For question 4-5 I got very vague feedback without specifying exactly why I got points removed and for what reason so my suggestion would be to improve this for next year. E.g. for question 5 I got the feedback that the grader did not agree with my conclusions and thus gave me 1 point off, without specifying why. Especially for an open question about discussing potential possibilities of a scenario, you do not have to agree with a student but if they have stated several motivations that correlate well with their conclusion why cut back on points without motivating the reasoning?

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

Exam grading wasn't clear, corrections are not clear, I wasn't able to understand why points were taken away from my answers even if answering following the knowledge given through the course.

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

Thank you for an interesting course, this was a new subject for me! :)

No

SPECIFIC QUESTIONS

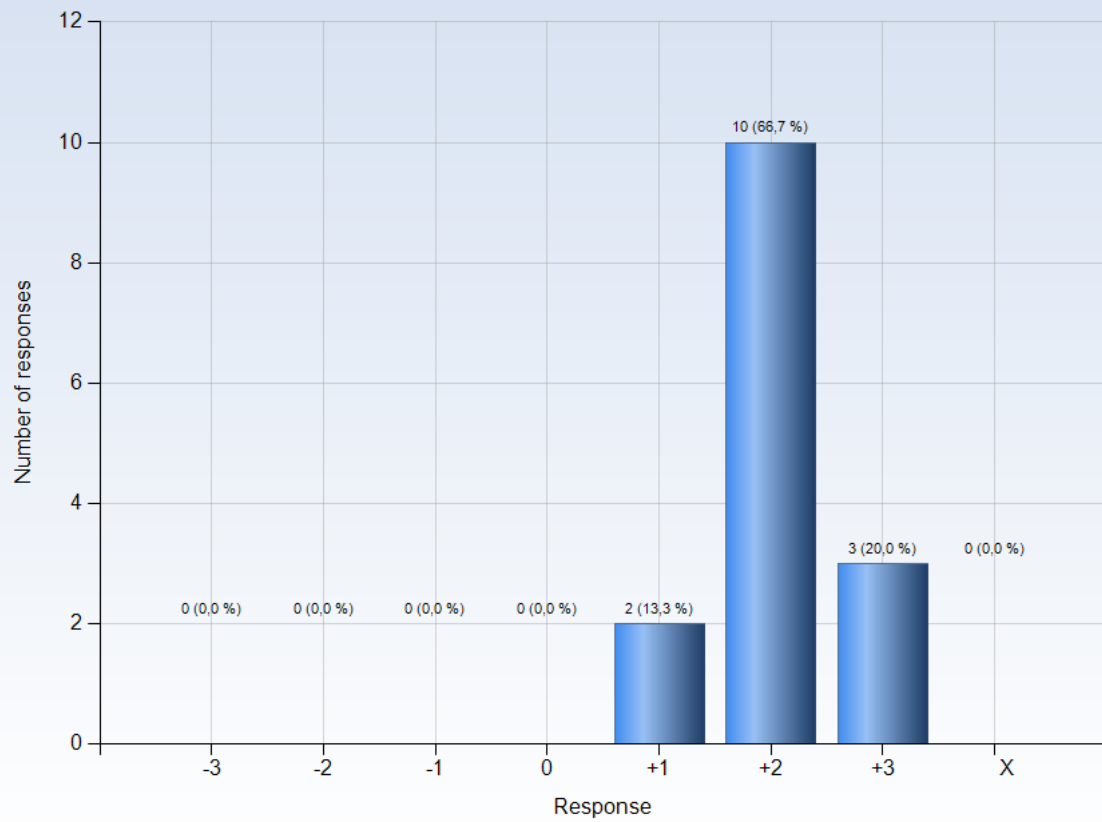The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-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
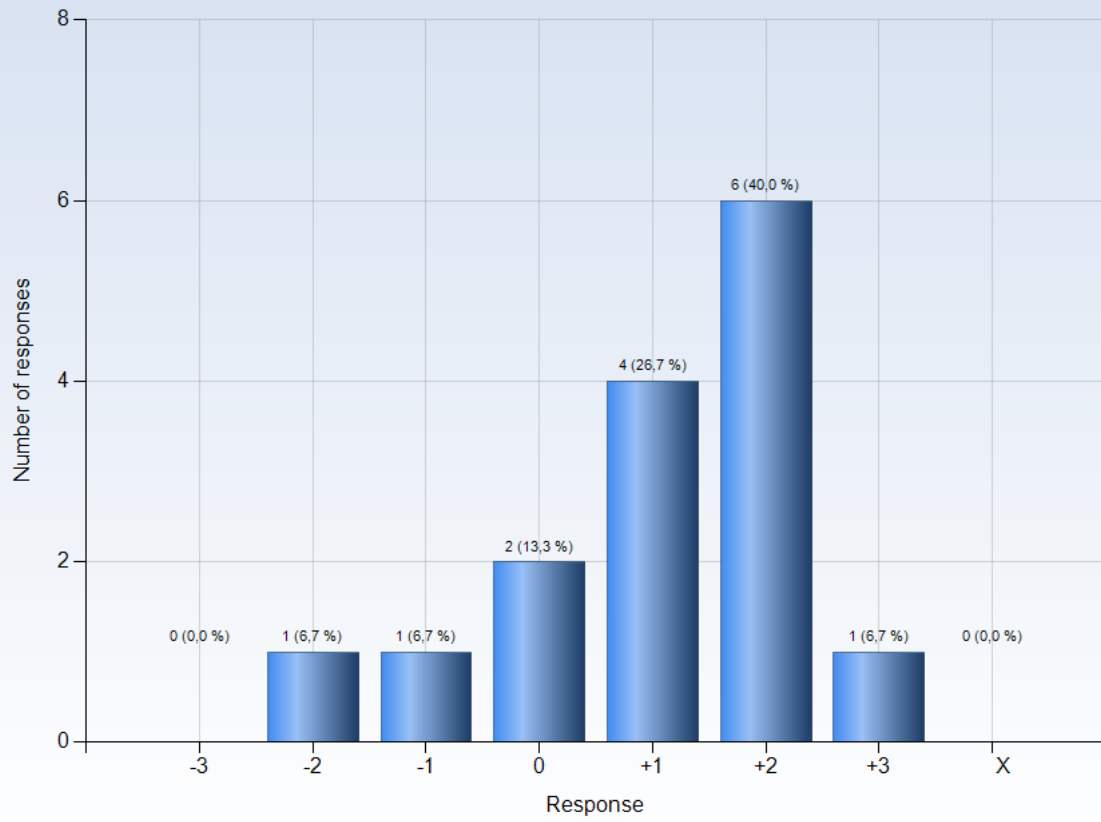
1. I worked with interesting issues

Number of responses vs Response

- -3: 0 (0,0 %)
- -2: 0 (0,0 %)
- -1: 0 (0,0 %)
- 0: 0 (0,0 %)
- +1: 2 (13,3 %)
- +2: 10 (66,7 %)
- +3: 3 (20,0 %)
- X: 0 (0,0 %)

Comments

Comments (My response was: +1)
Maybe it would have been nice to apply it even more to biotechnology during lectures.

Comments (My response was: +2)
I would like more focus on biotech during the lectures

4. The course was challenging in a stimulating way

Comments

Comments (My response was: -2)

It sometimes felt a bit "too easy". Would have like more deeper discussions.

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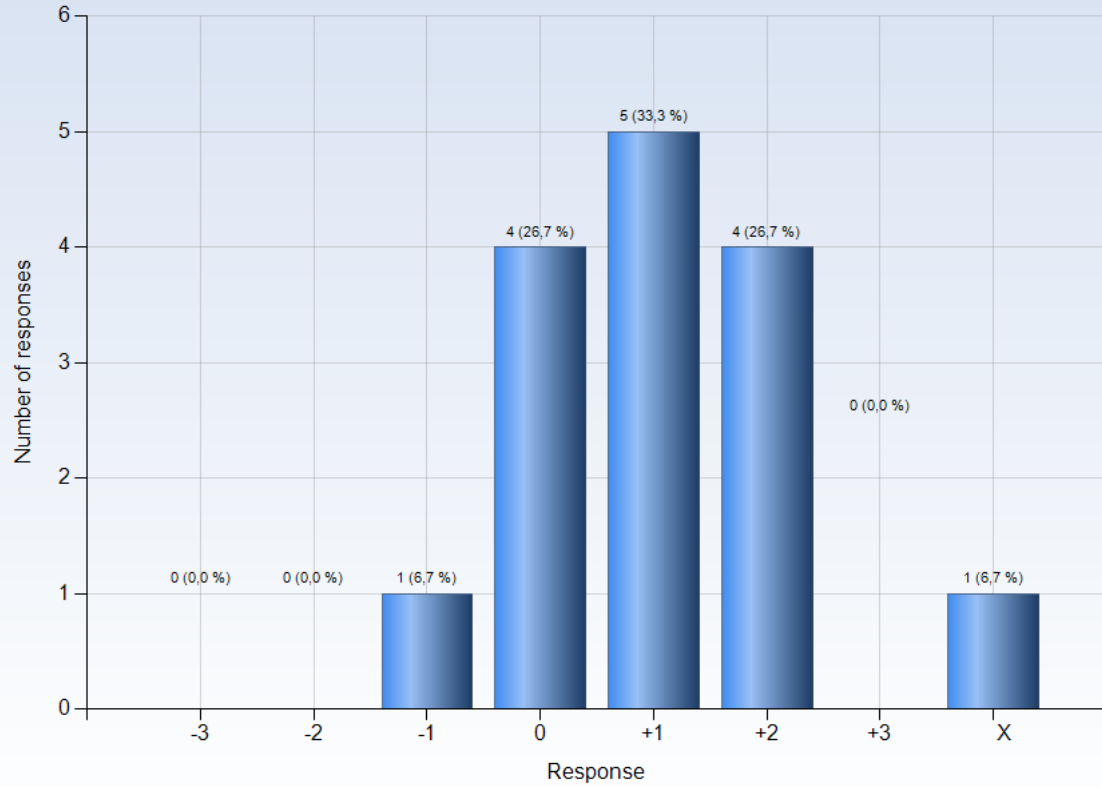
Comments

Comments (My response was: 0)

I can't remember what they were...

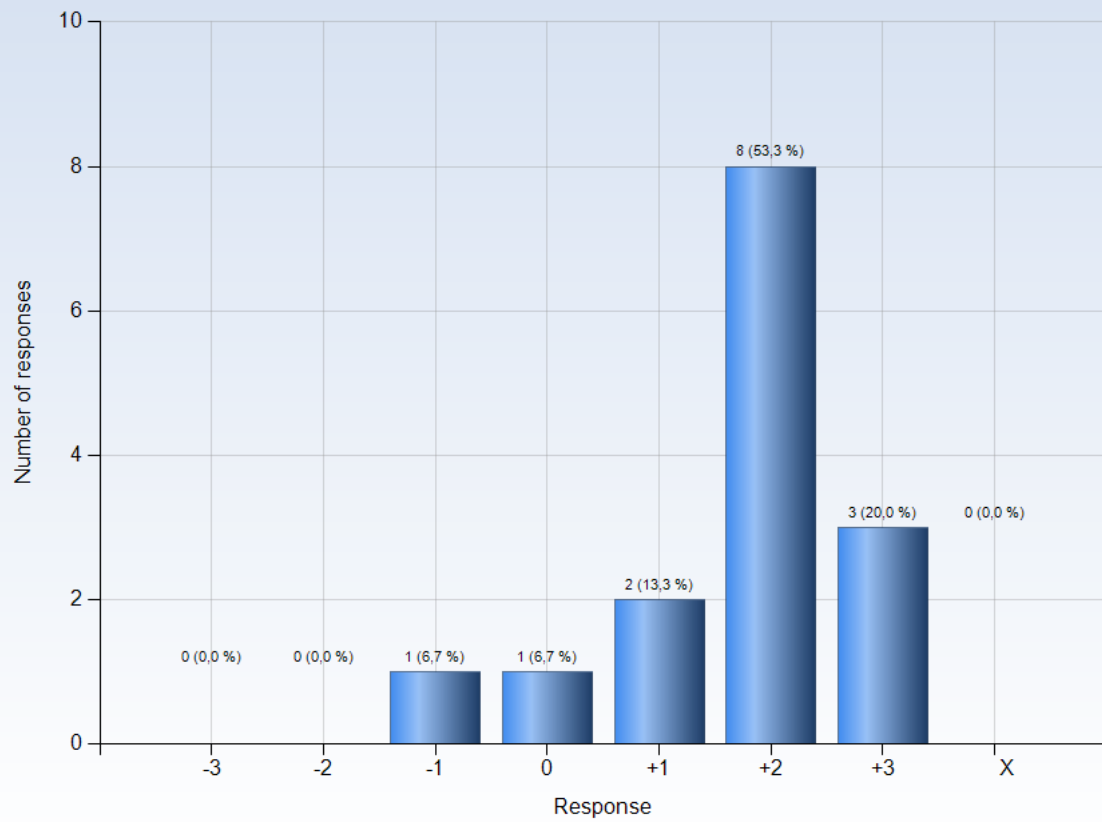## 10. I was able to learn from `concrete examples` that I could to relate to
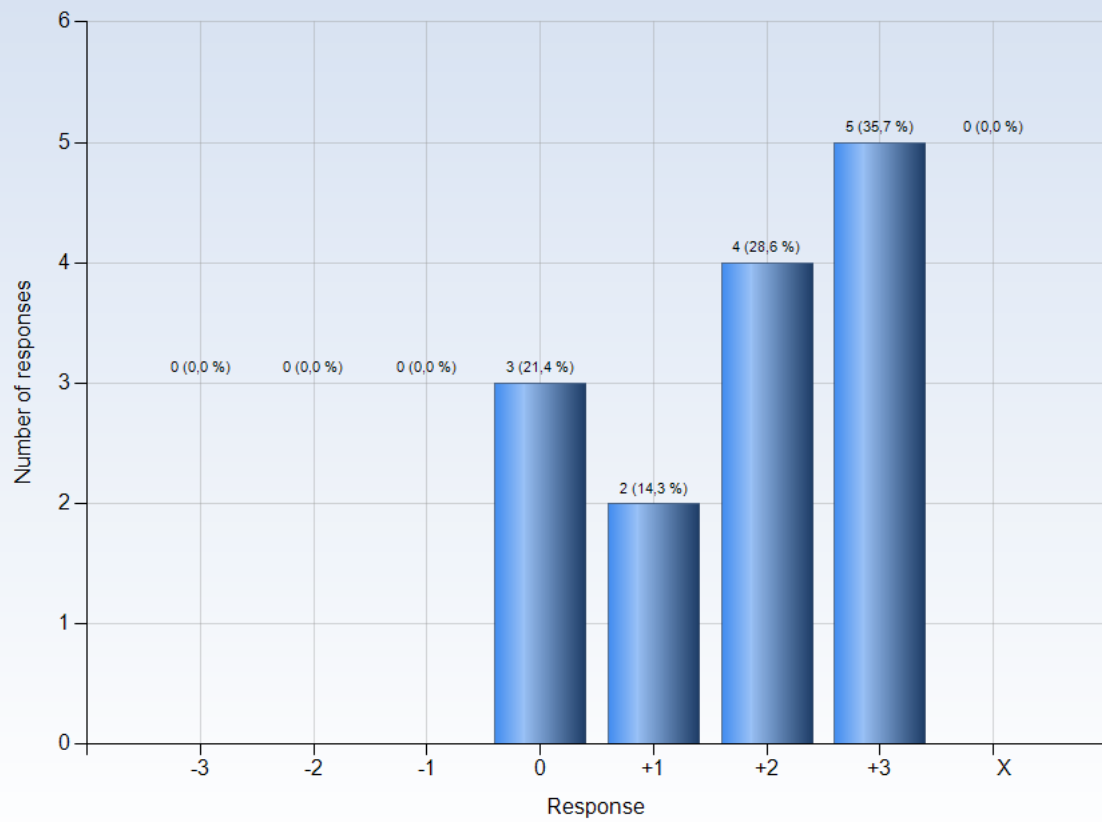
Comments

Comments (My response was: +2)
Both yes and no, I would like more concrete examples on the system thinking.
Would like more biotech related examples during the lectures

# 11. Understanding of key concepts had high priority

Comments

Comments (My response was: +2)
I think that it would be good to explain the meaning of system thinking and system analysis with more substantial examples.

Comments (My response was: +3)
Yes, the key concepts were properly introduced on each lectures prior du discussion

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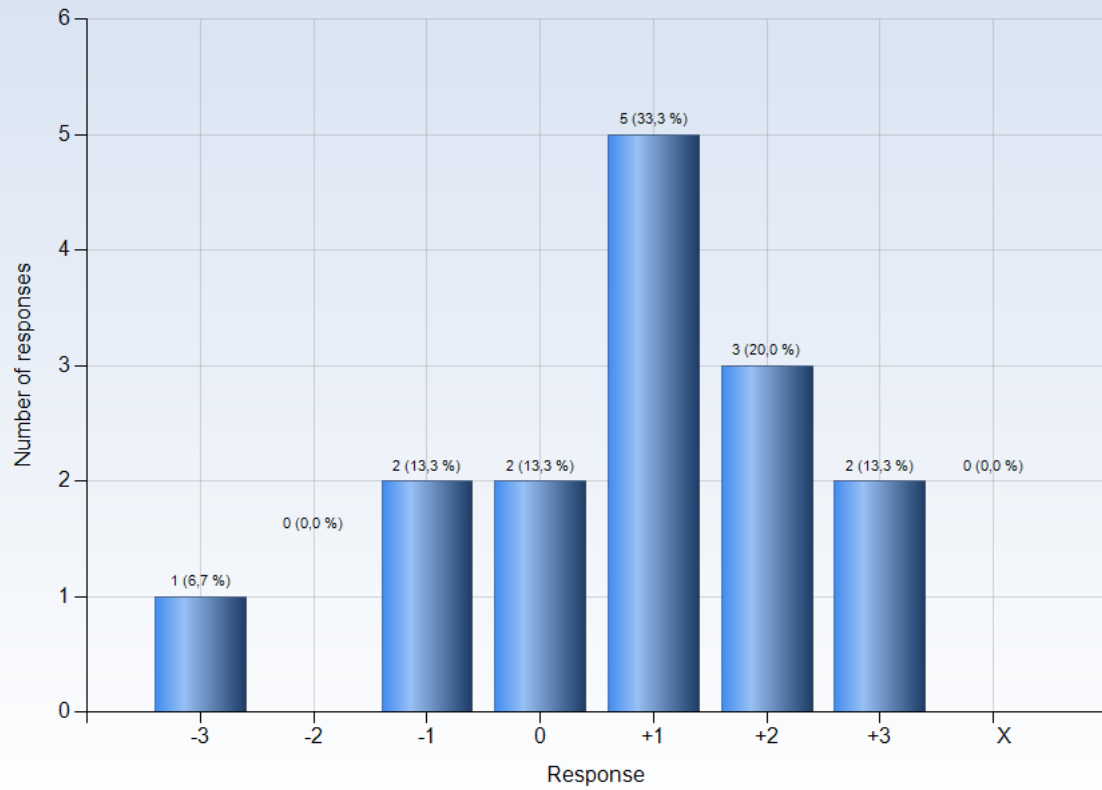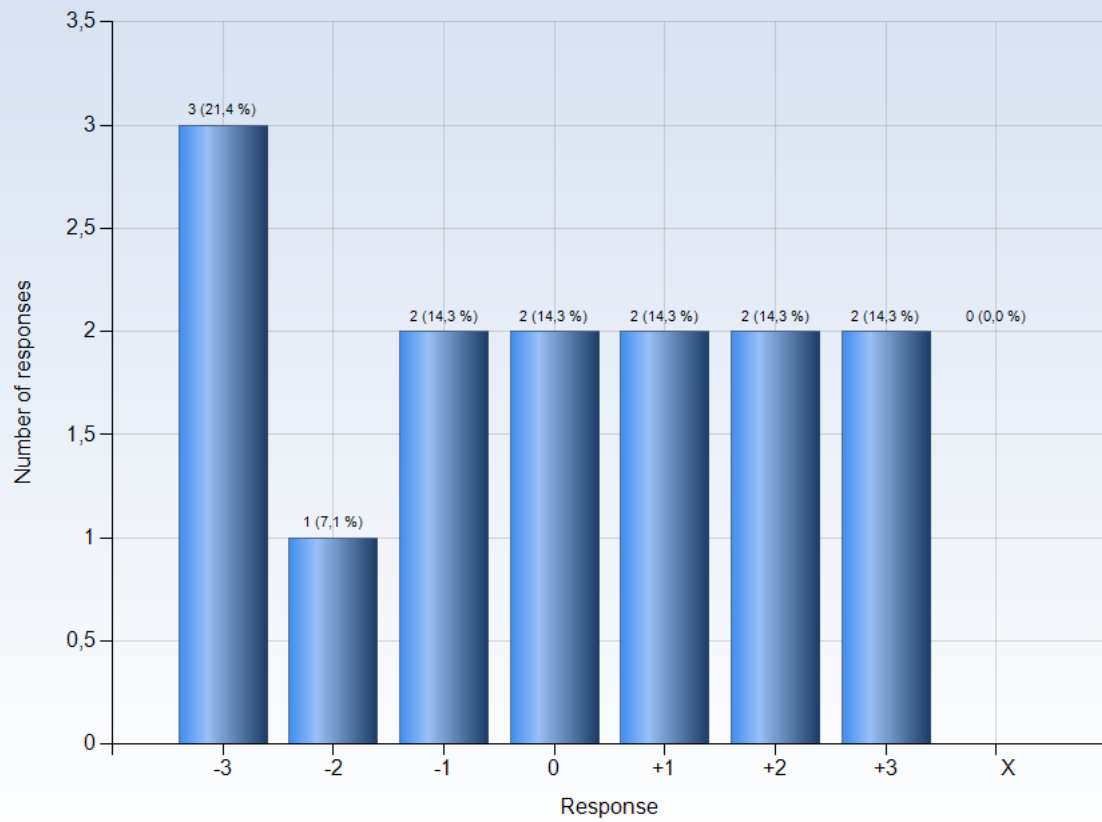

Comments

Comments (My response was: +2)
I think that some examples of calculations would be good to include in the LCA lectures.

Comments (My response was: +3)
Yes, I didn't put and real effort for memorising stuff for the exam outside of the course activities

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

Number of responses

- -3: 3 (21,4 %)
- -2: 1 (7,1 %)
- -1: 2 (14,3 %)
- 0: 2 (14,3 %)
- +1: 2 (14,3 %)
- +2: 2 (14,3 %)
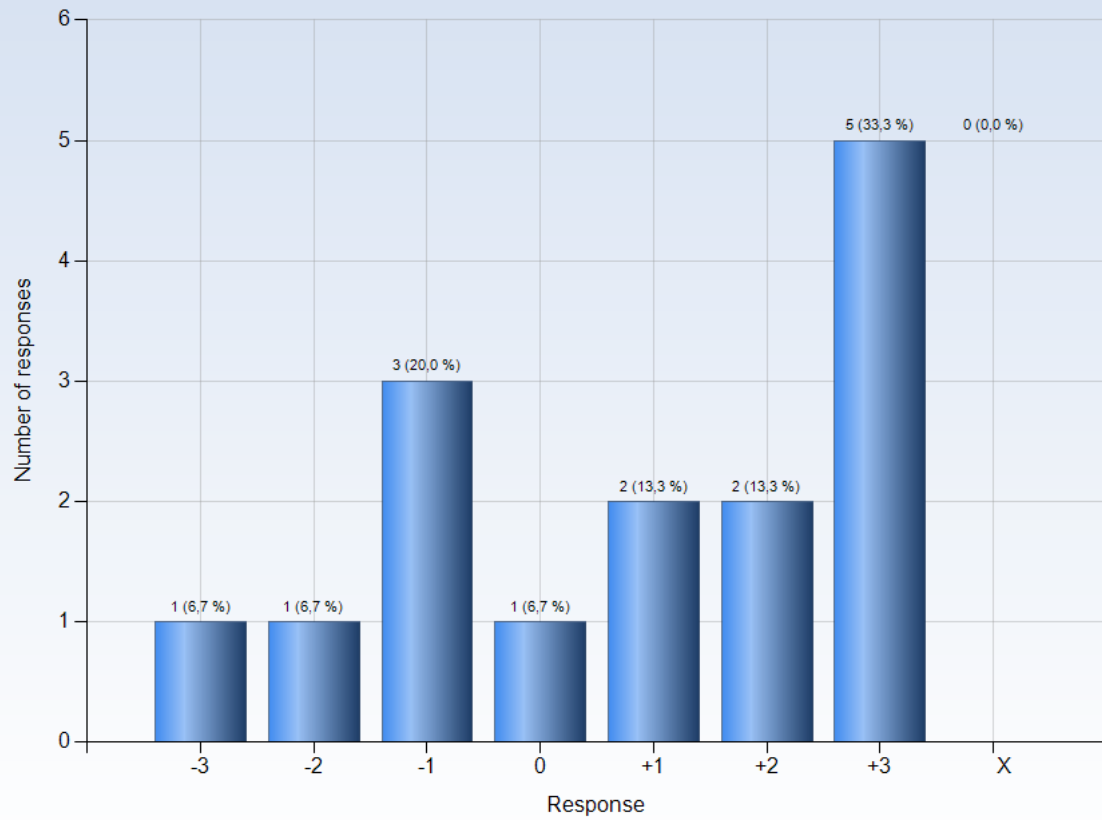- +3: 2 (14,3 %)
- X: 0 (0,0 %)

Response

Comments

Comments (My response was: +2)

Discussion on the lectures and discussion with the assistants and supervisors during the project were good learning environments

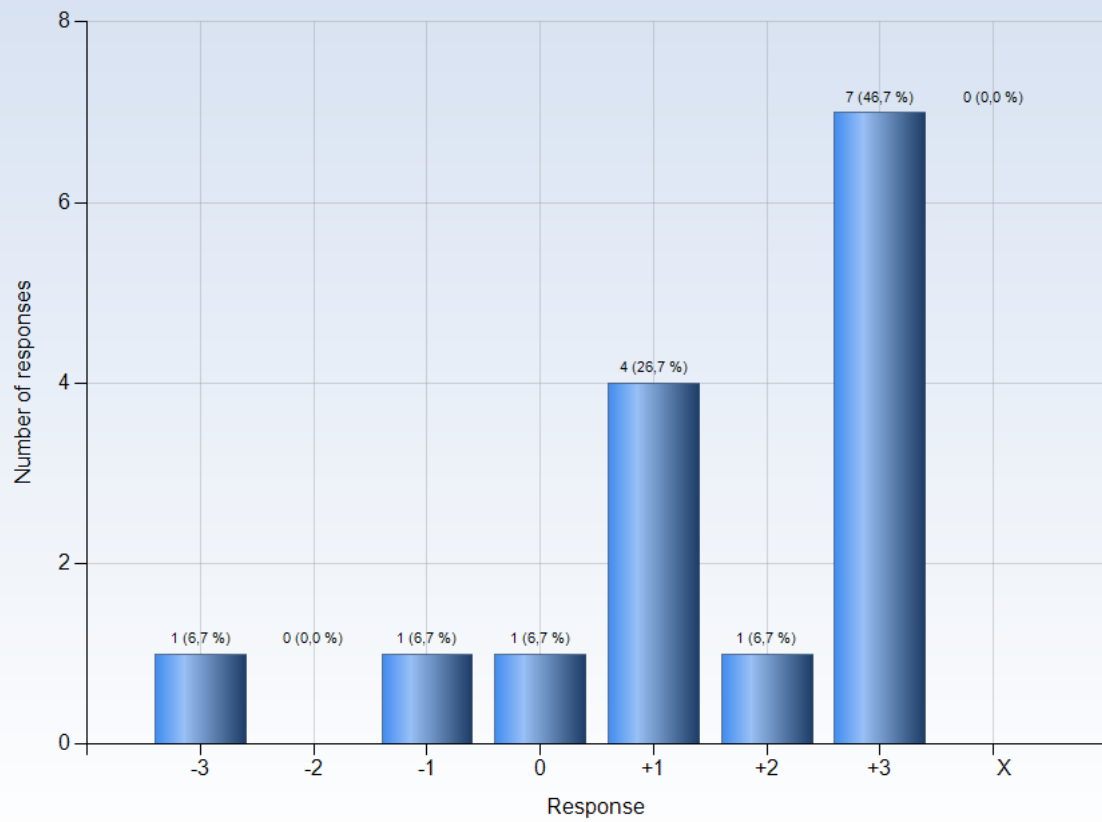## 16. The assessment on the course was fair and honest

Comments

Comments (My response was: -1)
Too hard

Comments (My response was: +3)
Yes, all of the answers could be found in the lectures. I would almost like some deeper discussion questions

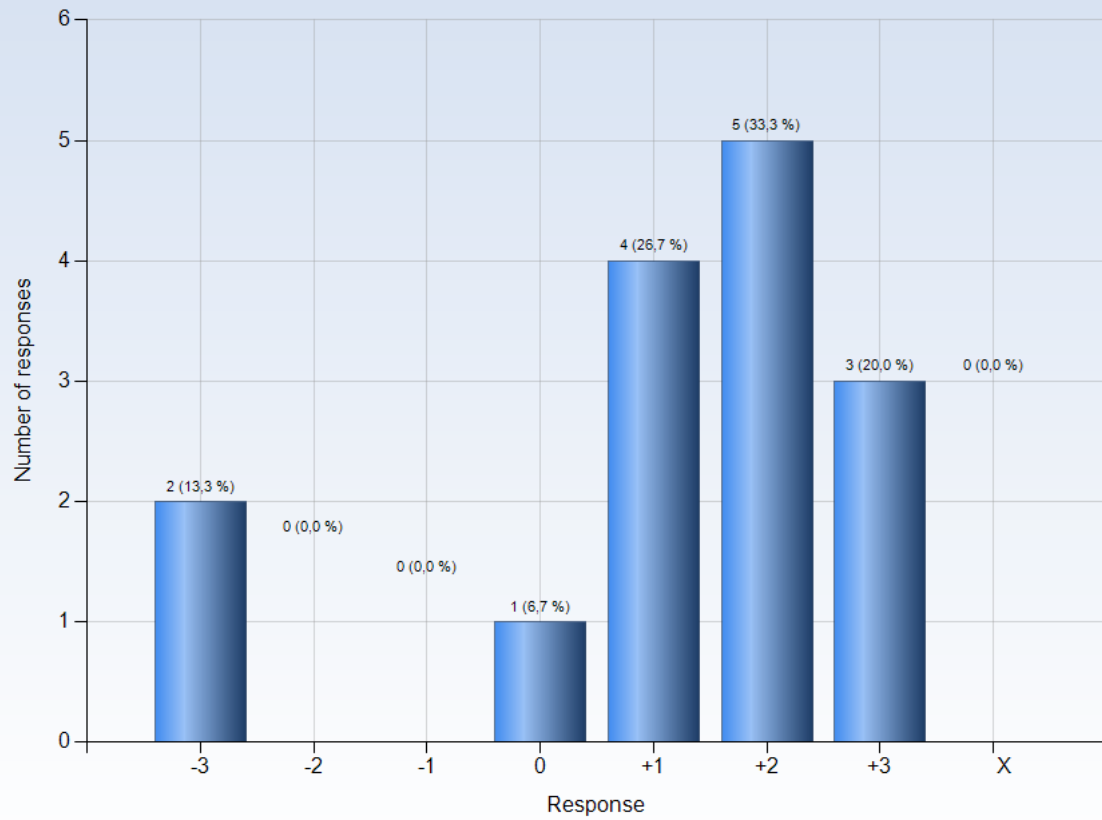## 17. My background knowledge was sufficient to follow the course

Number of responses

- 8
- 7 (46,7 %)
- 0 (0,0 %)
- 6
- 4 (26,7 %)
- 4
- 2
- 1 (6,7 %)
- 0 (0,0 %)
- 1 (6,7 %)
- 1 (6,7 %)
- 1 (6,7 %)
- 0

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

Comments

Comments (My response was: +3)

I had worked with LCA in other classes before, but not on such a detailed level, more general

NOT LCOPT

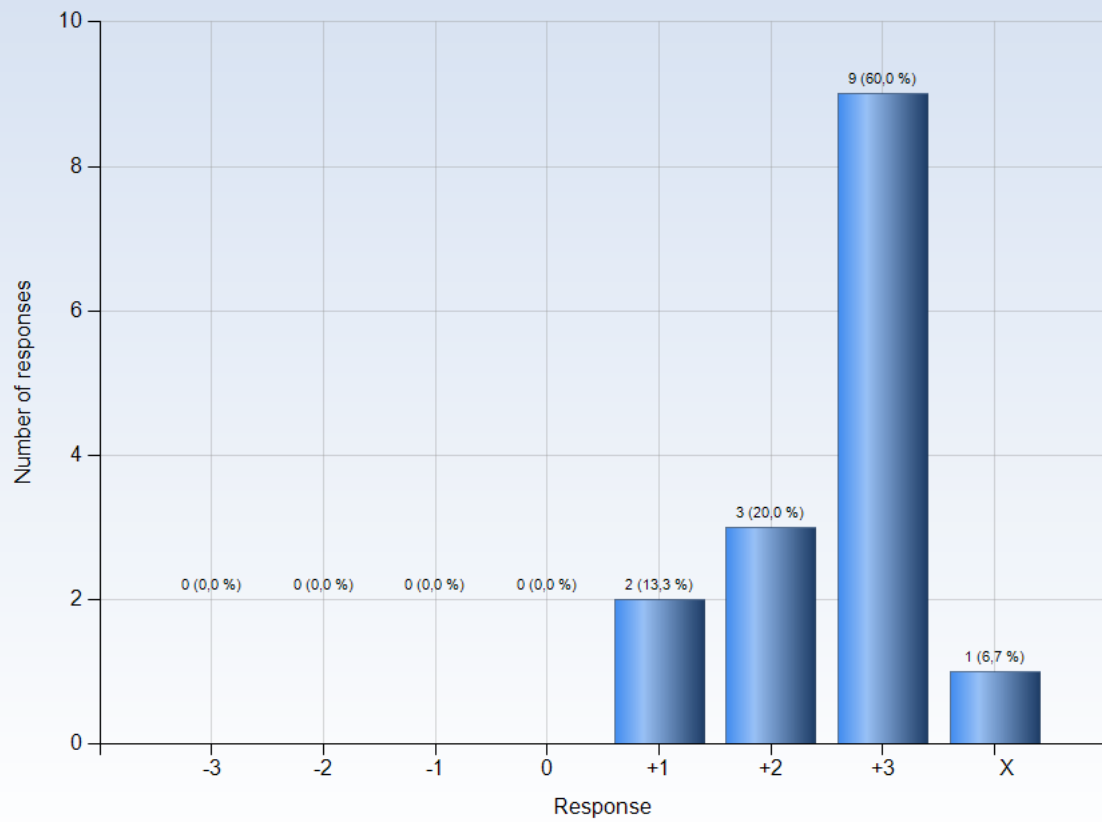# 19. The course activities enabled me to learn in different ways

Comments

Comments (My response was: +3)

Thete was a wide range of activities

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

Number of responses

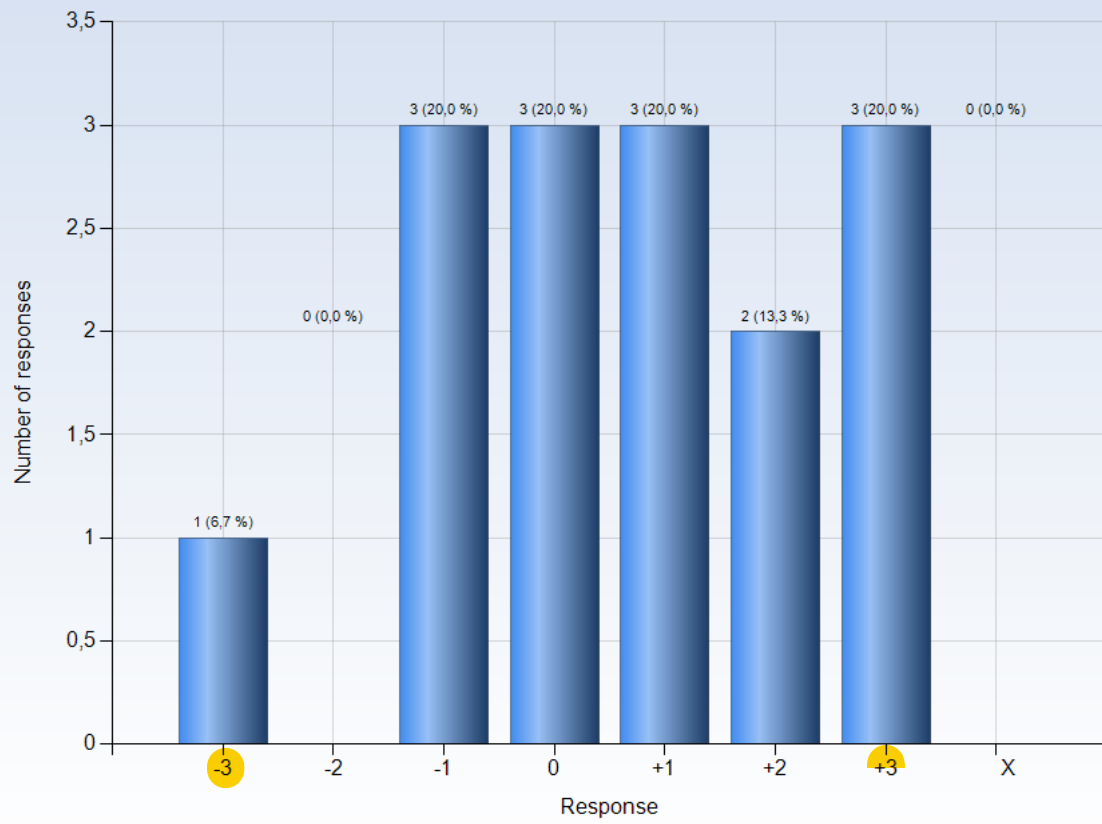| Response	Count
-3	0 (0,0 %)
-2	0 (0,0 %)
-1	0 (0,0 %)
0	0 (0,0 %)
+1	2 (13,3 %)
+2	3 (20,0 %)
+3	9 (60,0 %)
X	1 (6,7 %)

Comments

Comments (My response was: +2)

Partially, would like more deeper discussions, but that of course depends on the people involved in them...

Comments (My response was: +3)

It was good discussions on all the lectures.

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

Comments

Comments (My response was: +3)
The teachers were always available