

Report - FSF3847 - 2023-09-28

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

DESCRIPTION OF THE COURSE EVALUATION PROCESS

Describe the course evaluation process. Describe how all students have been given the possibility to give their opinions on the course. Describe how aspects regarding gender, and disabled students are investigated.

An LEQ questionnaire was sent to the students after completion of the course.

DESCRIPTION OF MEETINGS WITH STUDENTS

Describe which meetings that has been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)

During the course, weekly office hours have been offered. Additional office hours on request. Instructors have been available for discussions at lectures.

COURSE DESIGN

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

The intent of the course is to give students who are not specialized in optimization a training in both theory and methods as well as applications of convex optimization. The lectures cover theory, methods and applications. The instructors coming from different departments contribute with their different research expertise and perspectives. Myself from the department of mathematics, Mats Bengtsson and Joakim Jaldén from the department of intelligent systems. The students hand in homework assignments, which cover theory as well as own implementation of an optimization method. In addition, they read and present a research paper. The design was similar to previous course offering, in the spring of 2021. However, we were now able to give the lectures on site, compared to Zoom two years ago due to the covid situation at the time. Video recordings from the previous course offering were made available, as a complement.

THE STUDENTS' 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?

The workload appears reasonable.

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 students overall performed well. We had 27 students completing the course out of 30 starting the course. This is a high number of students completing a course for a PhD level course, but slightly less than previous course offering in 2021.

STUDENTS' ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

Most students appreciate the setup of the course. In particular, the blending of theory, methods and applications.

SUMMARY OF STUDENTS' OPINIONS

Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

The overall impression of the questionnaire is positive.

OVERALL IMPRESSION

Summarize the teachers' overall impressions of the course offering in relation to students' results and their evaluation of the course, as well as in relation to the changes implemented since last course offering.

The setup of the course worked well overall. Compared to last course offering, there was a higher proportion of students needing to make complementary work to pass assignments.

ANALYSIS

Is it possible to identify stronger and weaker areas in the learning environment based on the information you have gathered during the evaluation and analysis process? What can the reason for these be? Are there significant difference in experience between:

- students identifying as female and male?
- international and national students?
- students with or without disabilities?

There is quite a variety in the answers, which is to be expected as we have students with quite a diverse background. The questionnaire does not give information for different groups of students. On student comments on the proportion of male and female students. We note that this is similar to last course offering, 74% male students and 26% female students. A few students handed in solutions to homework assignments that were rather similar, in spite of rules given. There might therefore be reason to make the rules for the homework assignments even more clear for the next course offering.

PRIORITIZED COURSE DEVELOPMENT

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

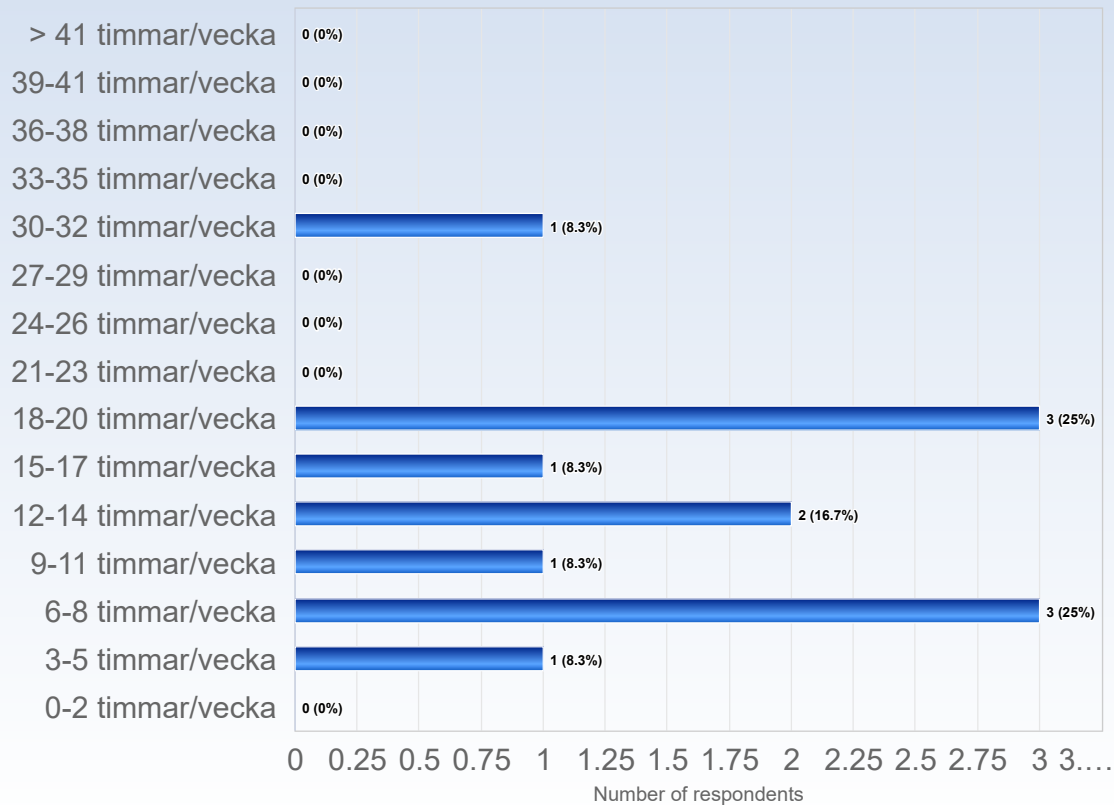
Lectures may be improved. There is always a balance between how much material to put in a lecture and how deep to cover the material. One might consider giving more time for homework assignments, homework 4 in particular, since there were a higher proportion of students needing to do complementary work to pass compared to previous course offering.

FSF3847 - 2023-06-29

Antal respondenter: 30
Antal svar: 12
Svarsfrekvens: 40,00 %

ESTIMATED WORKLOAD

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



Comments

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

Workload was not heavy

Good

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

Varierade mellan veckor med fler hemläxor och föreläsningar och lugnare veckor, men ungefär

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

It was a reasonable workload, considering the scope of the course.

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

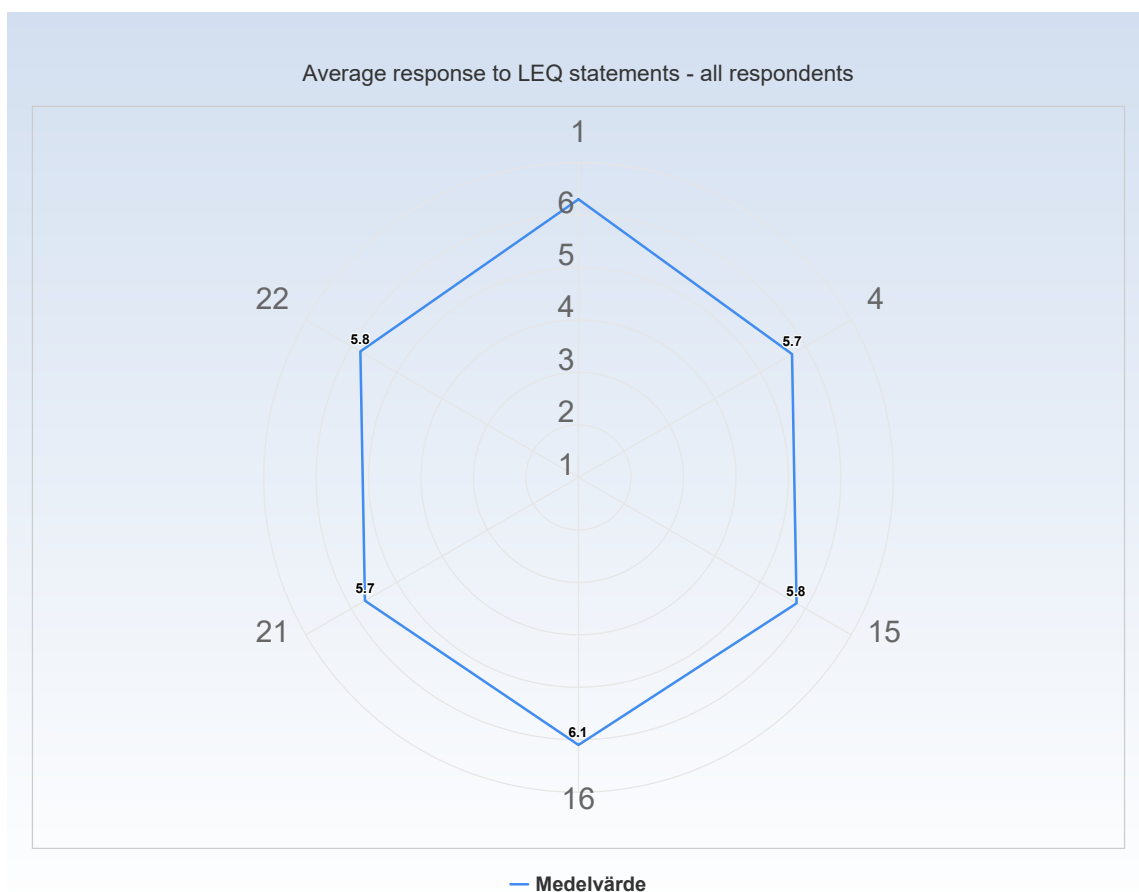
It was really practical course and I was so happy that I can learn both mathematical and implementation approaches.

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.



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.

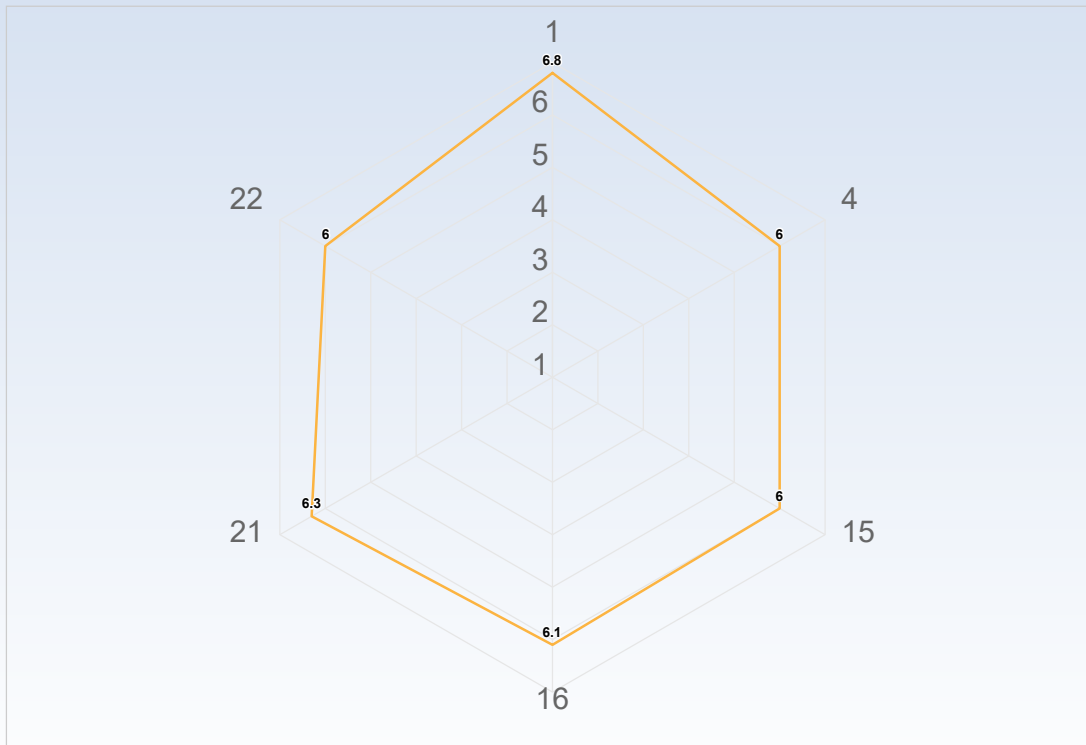
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

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

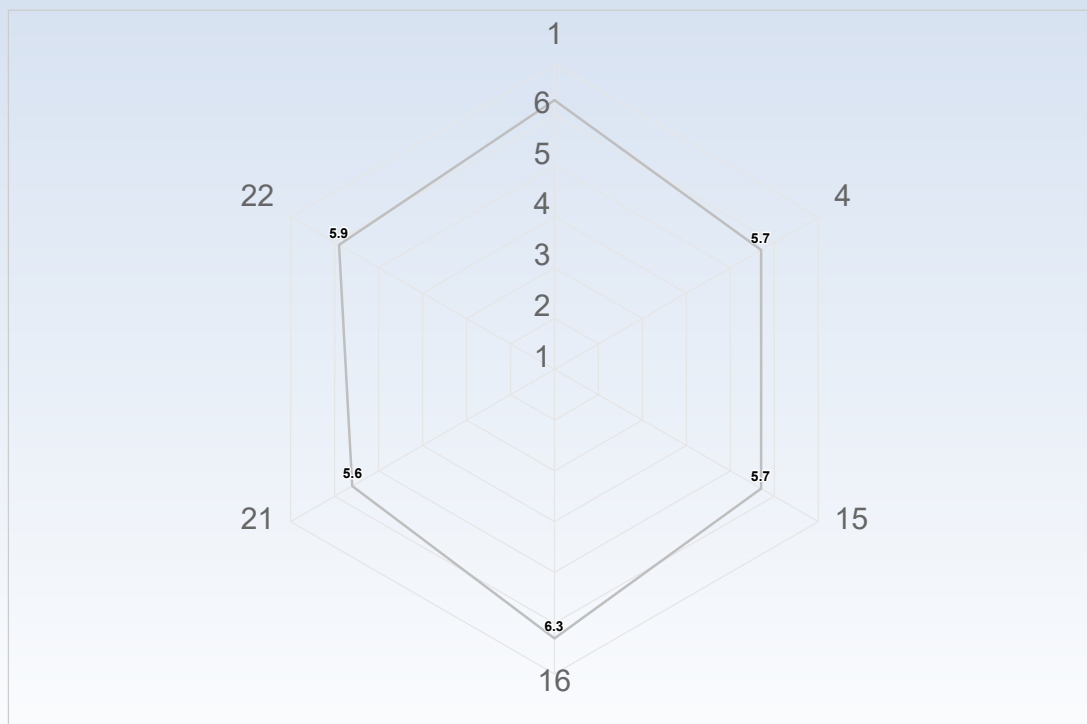
Comments (I am: Kvinna)

very few female students in this course this year

Comments (I am: Man)

Good

Average response to LEQ statements - per type of student



- Internationell masterstudent
- Svensk student i årskurs 4-5
- Internationell utbytesstudent
- Annan typ av student
- Svensk student i årskurs 1-3
- Vill ej uppge

Comments

Comments (I am: Annan typ av student)

KTH PhD student. Not Swedish, but took my master in KTH too.

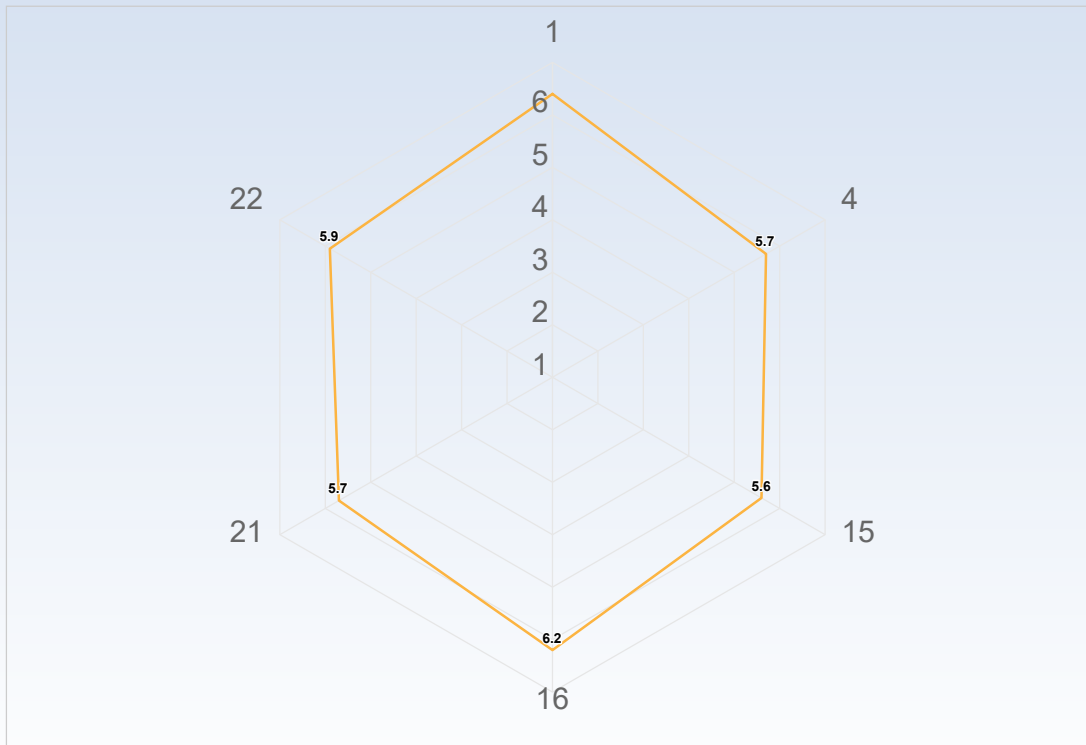
PhD student

PhD student

Doktorand

I am comfortable.

Average response to LEQ statements - per disability



— Ja — Nej — Vill ej uppge

Comments

Comments (My response was: Nej)

Nothing

GENERAL QUESTIONS

What was the best aspect of the course?

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

homework sections are really good, they helped me to have deeper understandings of topics.

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

The structure of the course was clear from start to finish. The lectures in combination with the course book were great.

Interesting topics.

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

Att lära sig generella jobba med CVX och formulera problem som går att lösa med konvex optimering

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

The book was very, very good.

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

Great balance between theory and application

The pace of the course was very nice .

In the last assignment, we did programming in Python or Matlab from our mathematical derivations and this part stimulates me how optimization algorithms are working.

What was the best aspect of the course? (I worked: 30-32 timmar/vecka)

Interactive lectures with quizzes that facilitated discussion between students and the professor.

What would you suggest to improve?

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

Add more lectures for students to digest, right now, some lectures have many contents that should be put in more lectures.

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

More programming tasks could be fun.

the lecture dedicated to linear programming and the simplex method was very confusing . As the lecturer said "this is a course in 2 hours" : in my opinion it would be better to split that lecture in 2 or decrease the amount of material

Nothing

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

The last group work is too short for us to prepare and present. I think around 10 day's time would be better.

Fler implementations-/matlabuppgifter kanske, så att man verkligen befäster kunskaperna. Ibland går det att komma undan på de teoretiska uppgifterna

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

Post suggested reading lists before lectures

Although course started from the basics but i think the level of difficulty increased rather abruptly, which made it a bit difficult to follow.

It was a very good syllabus so there is nothing to improve it in my point of view

What would you suggest to improve? (I worked: 30-32 timmar/vecka)

work needed to complete the homeworks is way more than for a 6 credit course.

set the homeworks' deadline during the day (for example at 17:00), instead of 23:59. So students can have go to sleep at a normal time and have a better work-life balance.

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)

read the textbook

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

Be passionate

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

Gå på föreläsningarna, de var trevliga!

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

To have some understanding of optimization before, it will come in handy.

Yes! I am 100% sure to recommend other future participants for taking this course

What advice would you like to give to future participants? (I worked: 30-32 timmar/vecka)

start studying for this course a few weeks before it starts.

plan to take the course with a colleague you can discuss and do the assignments with.

unless you studied these topics before, plan for a 9-10 credit course even if on paper is 6 credits.

Is there anything else you would like to add?

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

No

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

The instructors were very nice and helpful but the contents of the course are for those who must have some understanding of optimization.

Is there anything else you would like to add? (I worked: 30-32 timmar/vecka)

I'd like to clarify my comment: "just challenging not stimulating". I think that the way the course is structured makes it quite stressful as the homeworks take so much time and there are weekly late deadlines in the middle of the week. When a course is stressful in this way, it does not stimulate students to critically think about the topics but just rush through the course and therefore it does not feel stimulating.

I hope this helps to clarify my comment and improve future students' learning experience.

SPECIFIC QUESTIONS

RESPONSE DATA

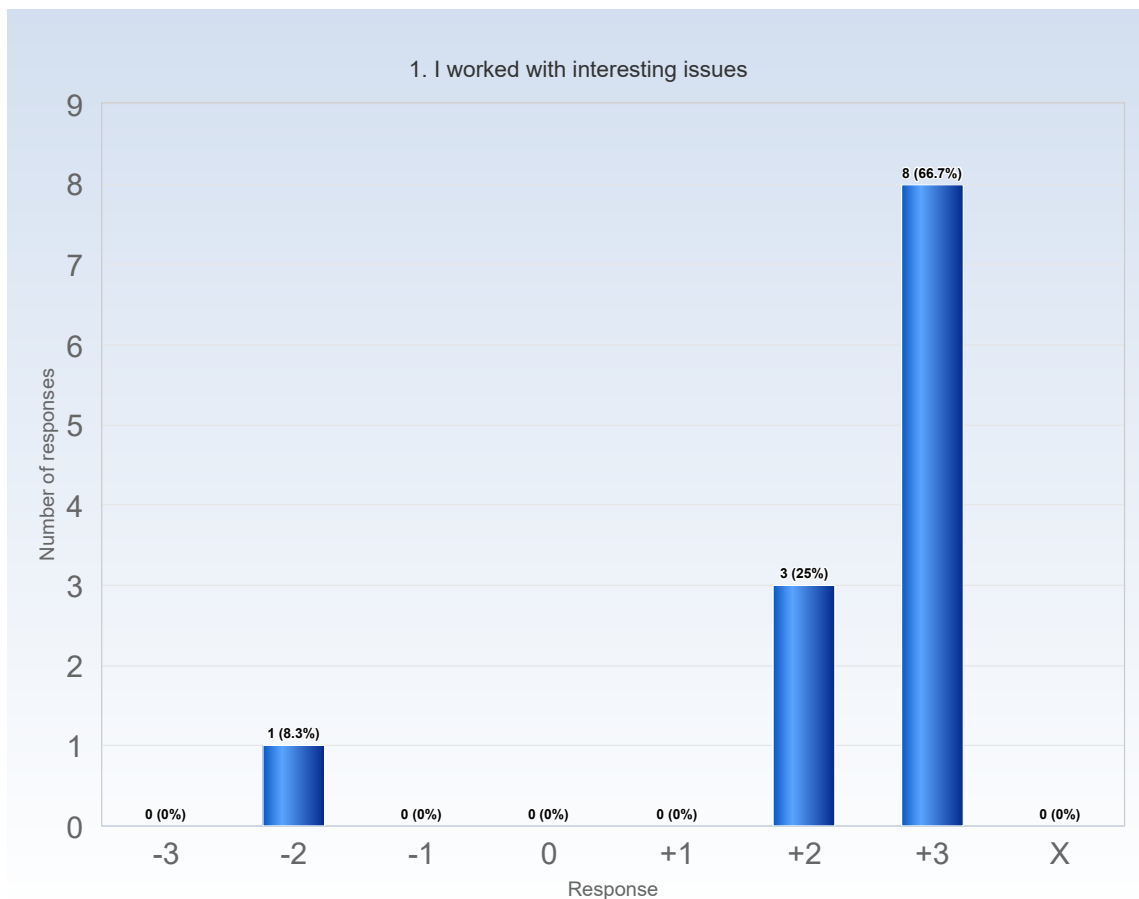
The diagrams below show the detailed response to the LEQ statements. The response scale is defined by:

-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

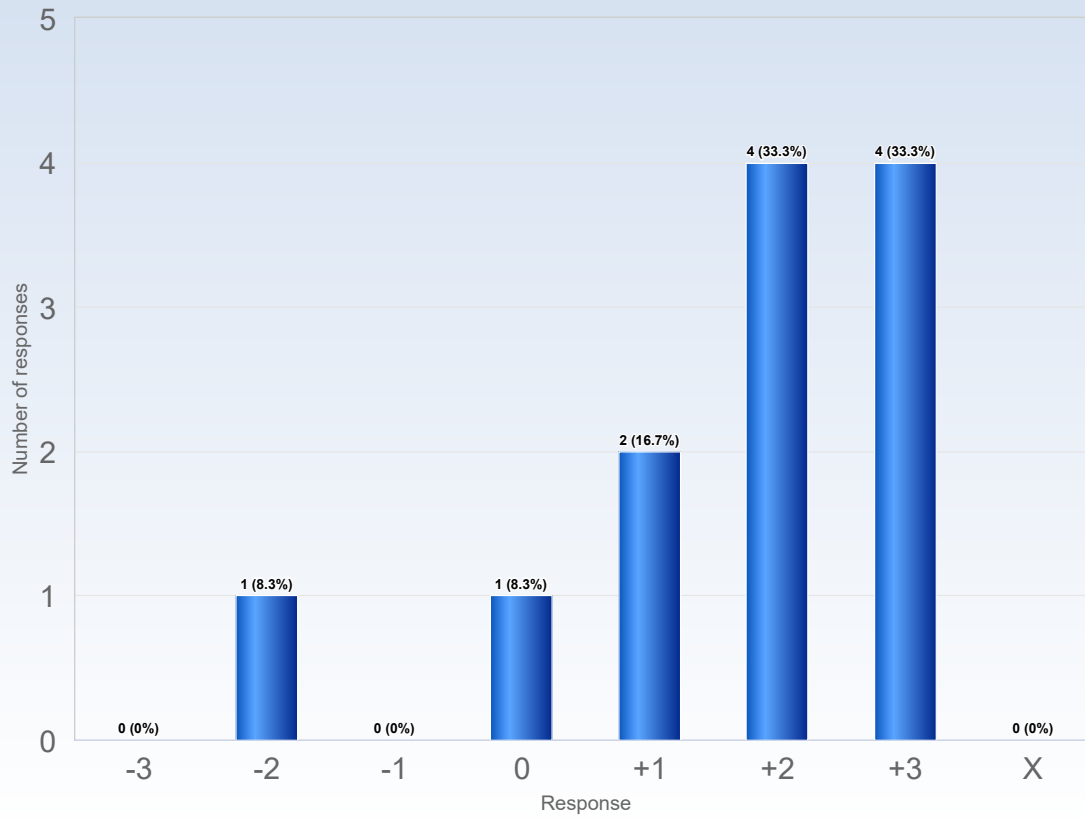


Comments

Comments (My response was: +3)

Interesting topics and much focus on application, fun!

4. The course was challenging in a stimulating way

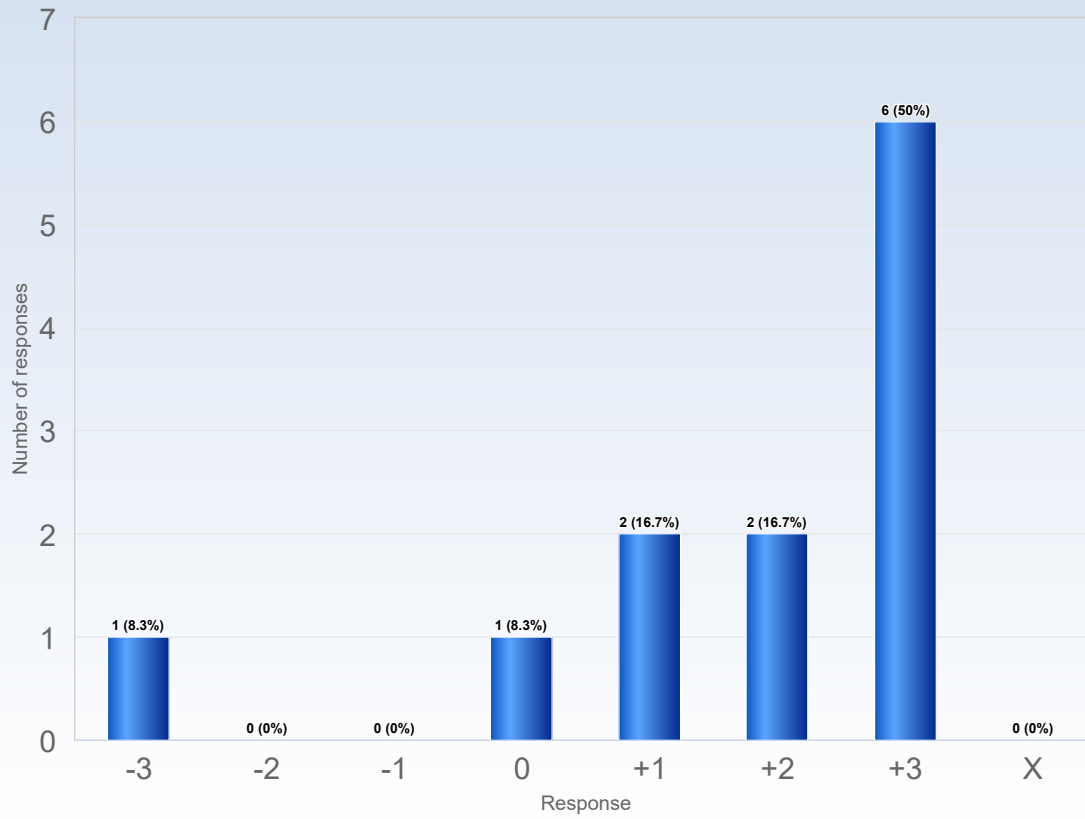


Comments

Comments (My response was: -2)
just challenging not stimulating

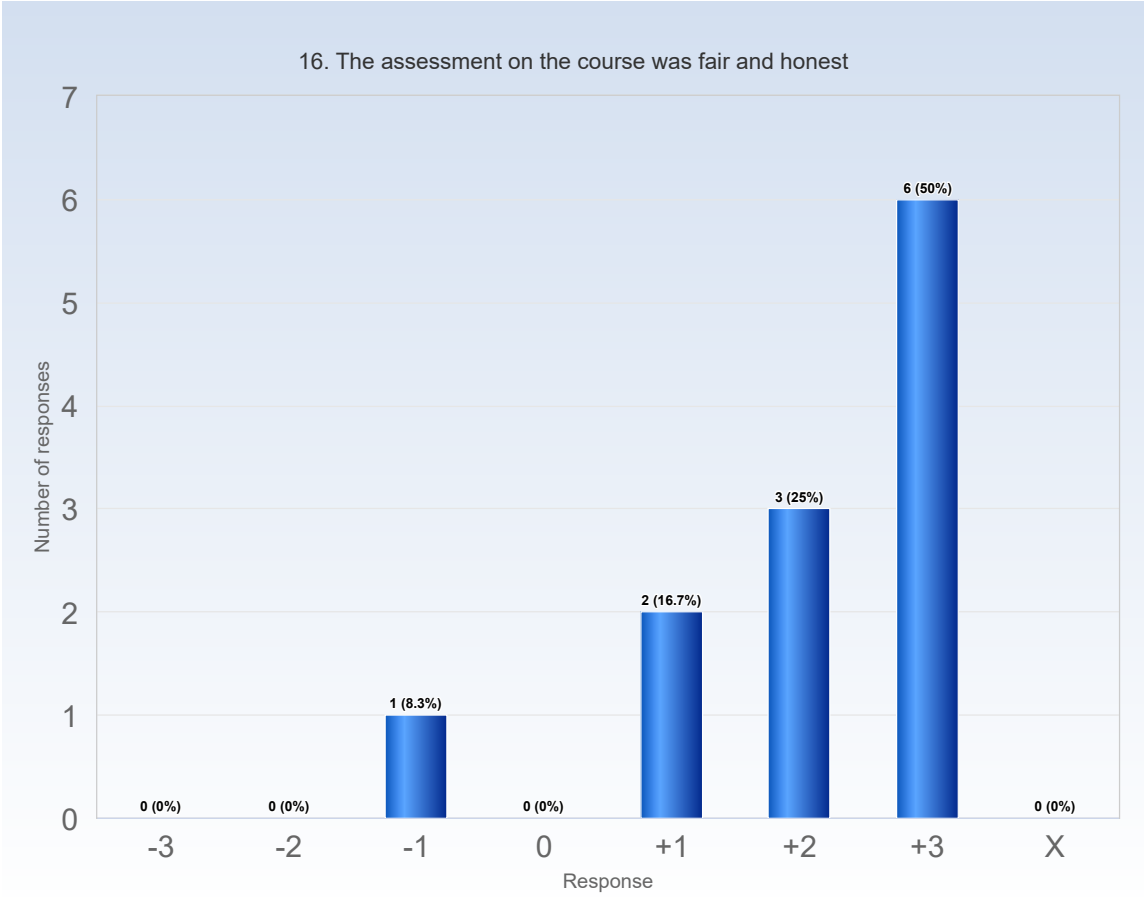
Comments (My response was: 0)
The course was not so demanding

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



Comments

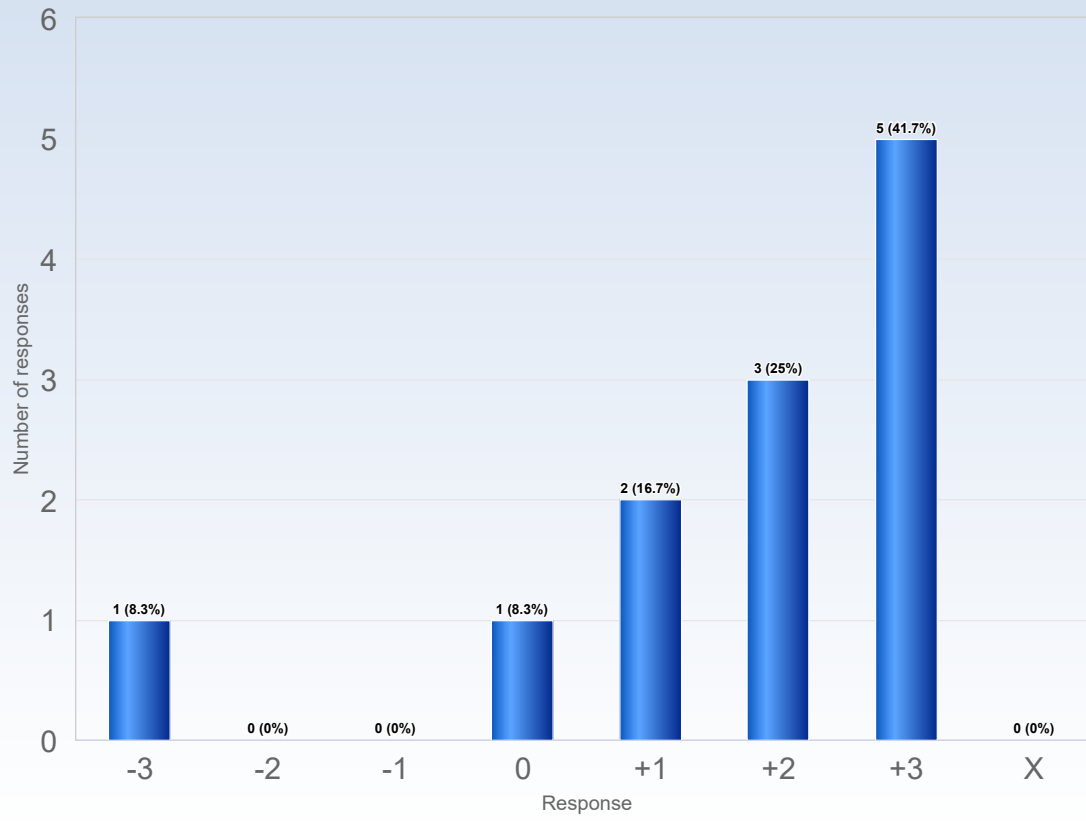
Comments (My response was: +3)
Primarily through collaboration with others



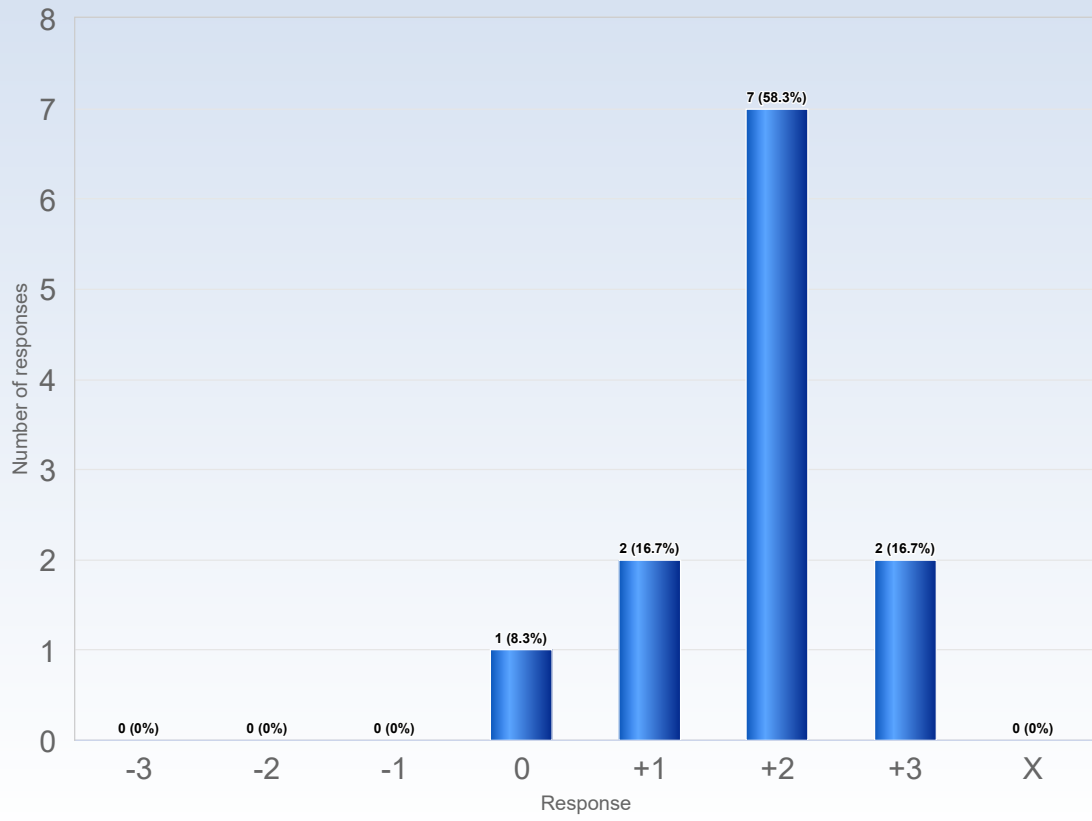
Comments

Comments (My response was: -1)
Assessment via homework assignments favour/reward those that work in groups.

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



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



Comments

Comments (My response was: +2)
Again, by collaborating with others
