



LUNDS
UNIVERSITET

Matematikcentrum

Matematik NF

Compilation Report for Linear Algebra 2, Autumn 2020

Module leader: Kjell Elfström

Other teachers: Douglas Svensson Seth, Lea Miko Versbach.

Number of students: 92.

Grades in the original examination: 10 V, 37 G, 21 U

Evaluation

Compilation of the evaluation: See the following pages.

Teacher's comments: Lectures were held in person and broadcast via zoom. The seminars were held online. After each seminar, I also posted complete solutions to the exercises in Canvas.

The diagrams are similar to the diagrams in previous reports with some exceptions. The students seem to be less pleased with the seminars and the feedback from teachers. Maybe that has to do with the fact that so much of the teaching was online. The students could ask questions at the lectures via zoom, but seldom did. There was not much to give feedback on.

Among the comments, there are many opposite views. On the one hand many students found the book well-written and the lectures well-structured, but on the other hand some students found the book difficult to understand and meant that the lectures could be improved in some ways. The lectures were too similar to the book and the lecturer could be better at communicating for example. There were also some negative comments about the seminars.

The examination was not as expected. This is true. The examination was a take-home examination. Usually one of the questions is a theoretical question where the candidates are asked to state and prove one of the theorems in the book. This is for obvious reasons not suitable in a take-home examination. The students were informed in advance about this change.

There are also some comments about the programming project and in particular its timing. I interpret this to mean that the report of the assignment was too close to the examination. I can agree with that.

Evaluation of changes since the last time the module ran: The previous evaluation did not cause any changes.

Suggestions for changes prior to the next time the module will be offered: The result of the survey does not call for any major change. I shall look into the timing of the programming project.

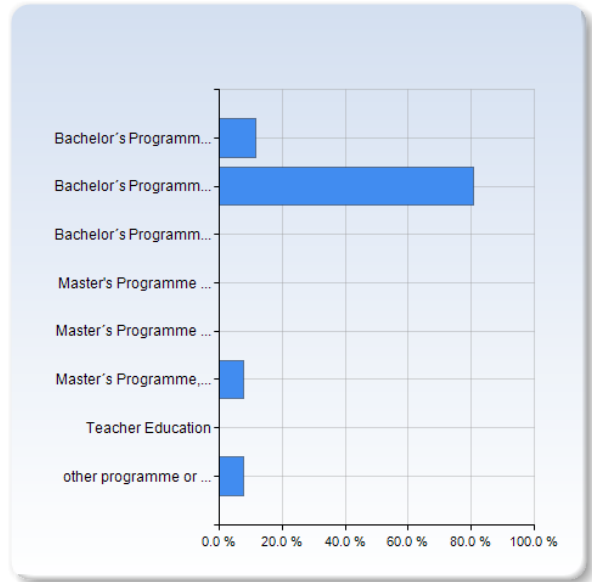
Compiler and date of compilation report: Kjell Elfström, 10 November 2020.

MATB22-ht20

Answer Count: 26

I have studied this course as part of

I have studied this course as part of	Number of Responses
Bachelor's Programme in Mathematics	3 (11.5%)
Bachelor's Programme in Physics, Theoretical Physics, Astronomy	21 (80.8%)
Bachelor's Programme, other specialization	0 (0.0%)
Master's Programme in Mathematics	0 (0.0%)
Master's Programme in Mathematical Statistics	0 (0.0%)
Master's Programme, other specialization	2 (7.7%)
Teacher Education	0 (0.0%)
other programme or as stand alone course	2 (7.7%)
Total	28 (107.7%)

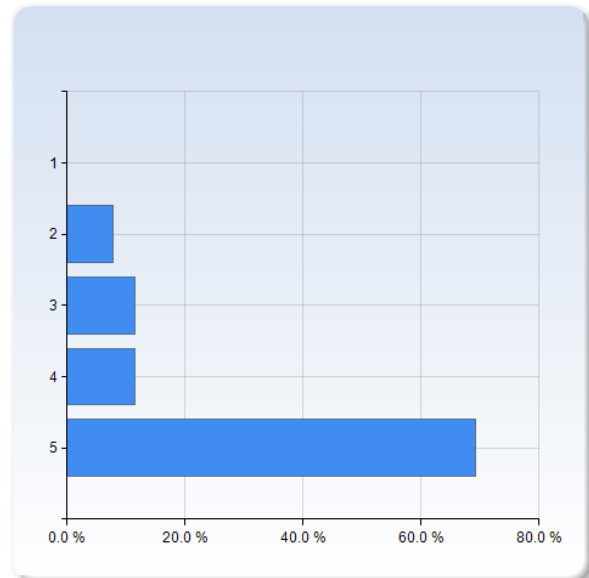


I have studied this course as part of	Mean	Standard Deviation
	2.6	1.9

On the scale 1-5 select the option that best matches your opinion: 1= disagree completely → 3= partly agree → 5= agree completely

2. My prior knowledge has been sufficient to assimilate the contents of this course.

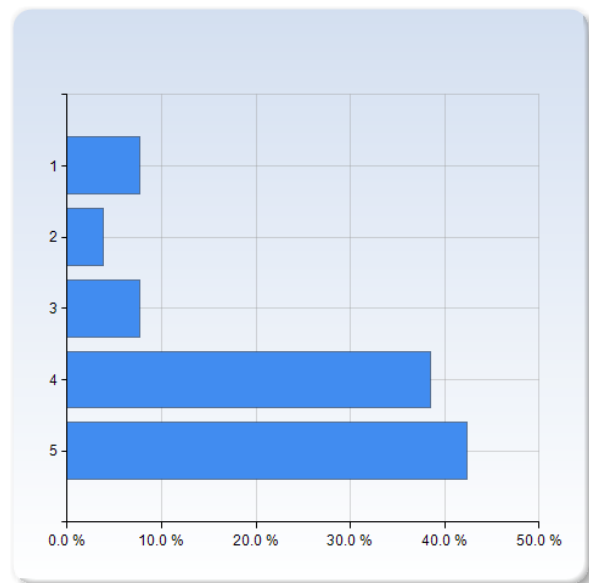
2. My prior knowledge has been sufficient to assimilate the contents of this course.	Number of Responses
1	0 (0.0%)
2	2 (7.7%)
3	3 (11.5%)
4	3 (11.5%)
5	18 (69.2%)
Total	26 (100.0%)



	Mean	Standard Deviation
2. My prior knowledge has been sufficient to assimilate the contents of this course.	4.4	1.0

3. I have participated actively in the course.

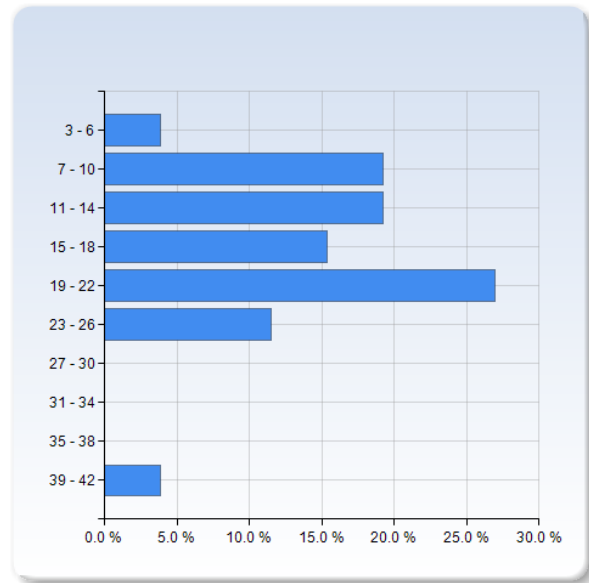
3. I have participated actively in the course.	Number of Responses
1	2 (7.7%)
2	1 (3.8%)
3	2 (7.7%)
4	10 (38.5%)
5	11 (42.3%)
Total	26 (100.0%)



	Mean	Standard Deviation
3. I have participated actively in the course.	4.0	1.2

Average number of hours spent in total on the course per week (including scheduled activities):

Average number of hours spent in total on the course per week (including scheduled activities):	Number of Responses
3 - 6	1 (3.8%)
7 - 10	5 (19.2%)
11 - 14	5 (19.2%)
15 - 18	4 (15.4%)
19 - 22	7 (26.9%)
23 - 26	3 (11.5%)
27 - 30	0 (0.0%)
31 - 34	0 (0.0%)
35 - 38	0 (0.0%)
39 - 42	1 (3.8%)
Total	26 (100.0%)



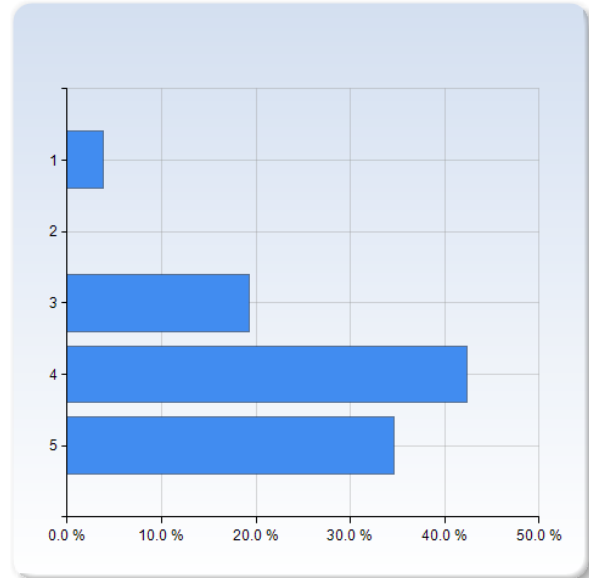
	Mean	Standard Deviation
Average number of hours spent in total on the course per week (including scheduled activities):	16.6	7.4

The course in general

On the scale 1-5 select the option that best matches your opinion: 1= disagree completely → 3= partly agree → 5= agree completely

The way the course was taught and organised suited me.

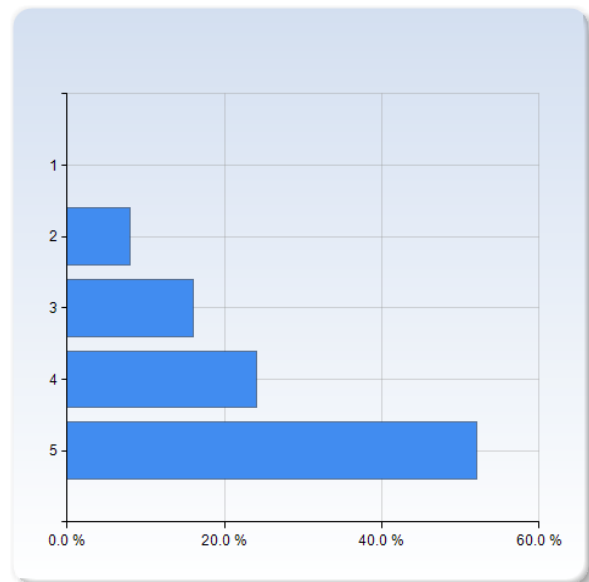
The way the course was taught and organised suited me.	Number of Responses
1	1 (3.8%)
2	0 (0.0%)
3	5 (19.2%)
4	11 (42.3%)
5	9 (34.6%)
Total	26 (100.0%)



	Mean	Standard Deviation
The way the course was taught and organised suited me.	4.0	1.0

The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.

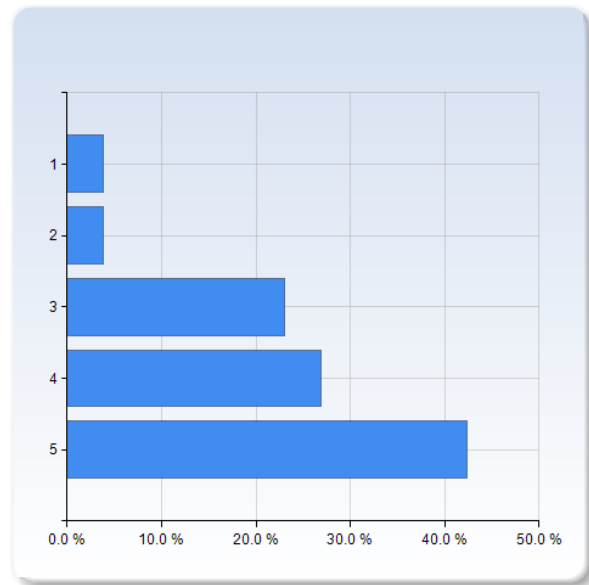
The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.	Number of Responses
1	0 (0.0%)
2	2 (8.0%)
3	4 (16.0%)
4	6 (24.0%)
5	13 (52.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.	4.2	1.0

The lectures were valuable for my learning.

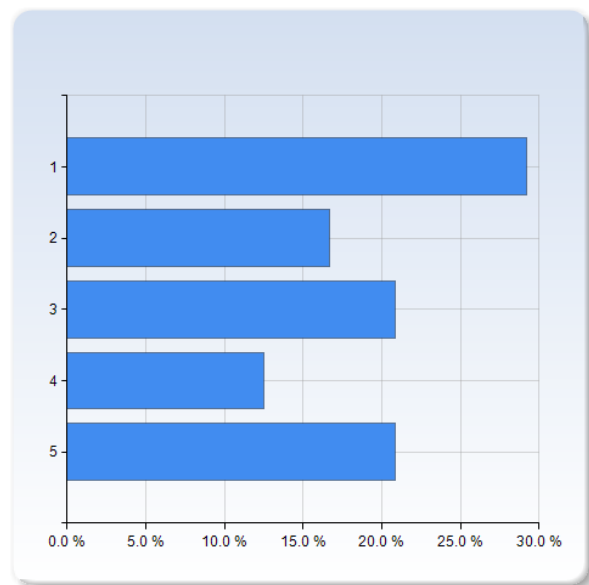
The lectures were valuable for my learning.	Number of Responses
1	1 (3.8%)
2	1 (3.8%)
3	6 (23.1%)
4	7 (26.9%)
5	11 (42.3%)
Total	26 (100.0%)



The lectures were valuable for my learning.	Mean	Standard Deviation
	4.0	1.1

The seminars were valuable for my learning.

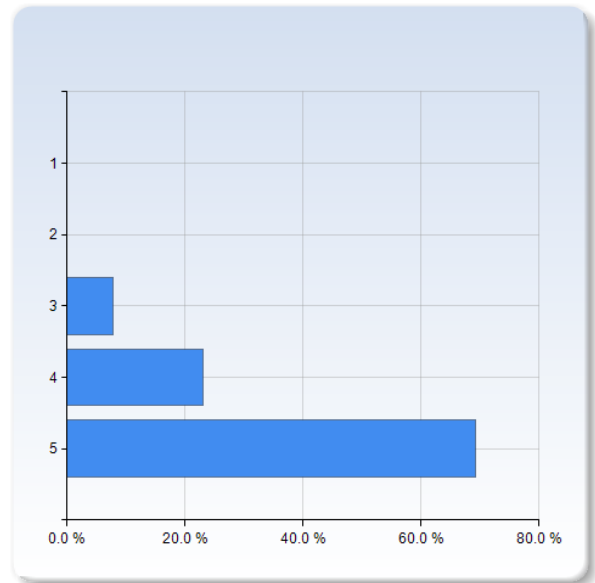
The seminars were valuable for my learning.	Number of Responses
1	7 (29.2%)
2	4 (16.7%)
3	5 (20.8%)
4	3 (12.5%)
5	5 (20.8%)
Total	24 (100.0%)



	Mean	Standard Deviation
The seminars were valuable for my learning.	2.8	1.5

Studying on my own was valuable for my learning.

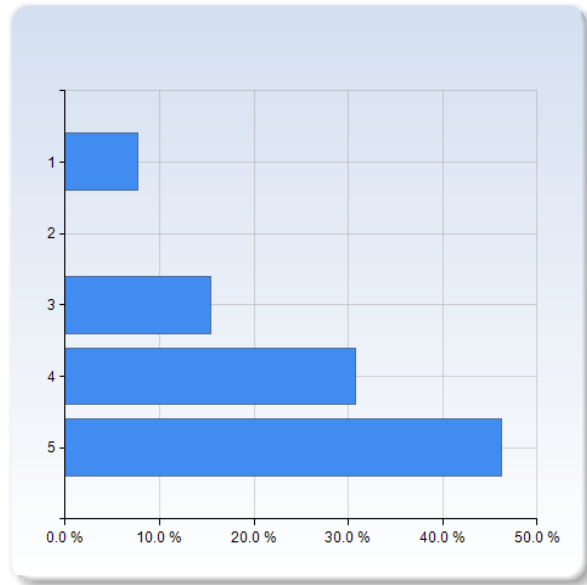
Studying on my own was valuable for my learning.	Number of Responses
1	0 (0.0%)
2	0 (0.0%)
3	2 (7.7%)
4	6 (23.1%)
5	18 (69.2%)
Total	26 (100.0%)



	Mean	Standard Deviation
Studying on my own was valuable for my learning.	4.6	0.6

The course literature/material was a valuable learning resource.

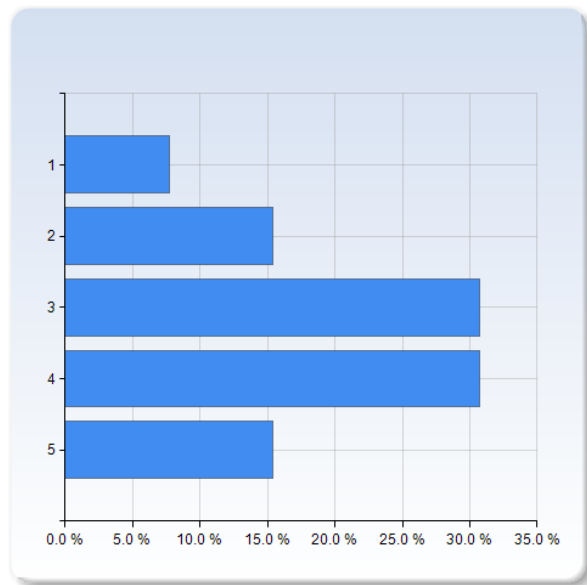
The course literature/material was a valuable learning resource.	Number of Responses
1	2 (7.7%)
2	0 (0.0%)
3	4 (15.4%)
4	8 (30.8%)
5	12 (46.2%)
Total	26 (100.0%)



The course literature/material was a valuable learning resource.	Mean	Standard Deviation
	4.1	1.2

The assignments were valuable for my learning.

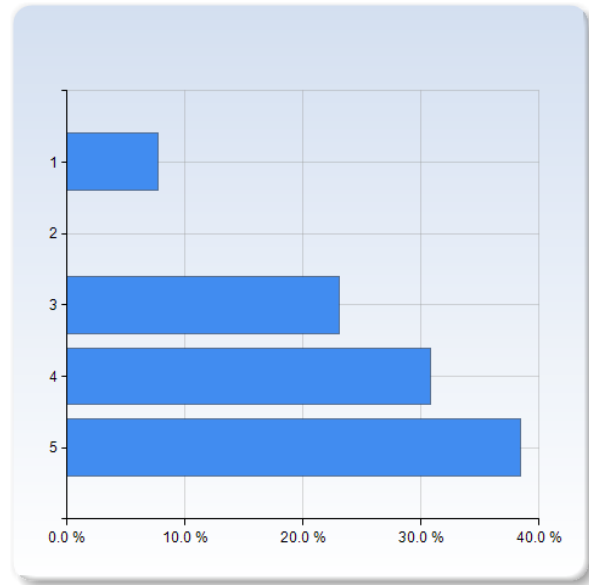
The assignments were valuable for my learning.	Number of Responses
1	2 (7.7%)
2	4 (15.4%)
3	8 (30.8%)
4	8 (30.8%)
5	4 (15.4%)
Total	26 (100.0%)



The assignments were valuable for my learning.	Mean	Standard Deviation
	3.3	1.2

The information I received before the course start was satisfactory.

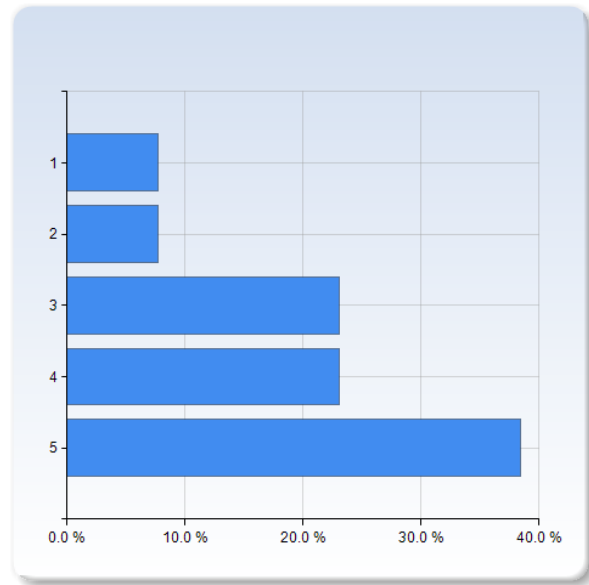
The information I received before the course start was satisfactory.	Number of Responses
1	2 (7.7%)
2	0 (0.0%)
3	6 (23.1%)
4	8 (30.8%)
5	10 (38.5%)
Total	26 (100.0%)



The information I received before the course start was satisfactory.	Mean	Standard Deviation
	3.9	1.2

The communication with the teaching staff during the course was good.

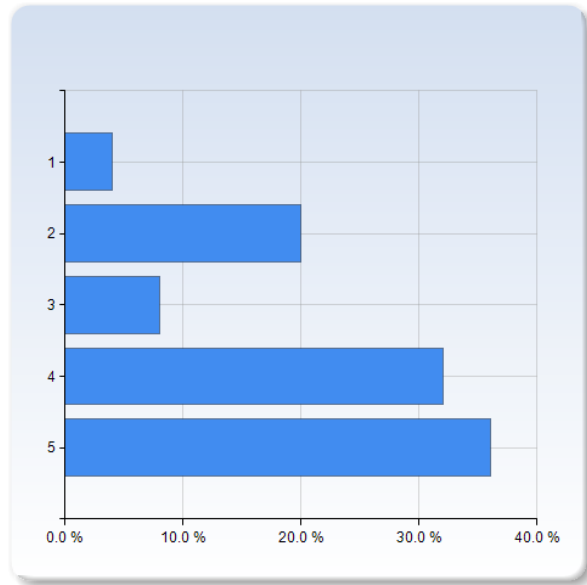
The communication with the teaching staff during the course was good.	Number of Responses
1	2 (7.7%)
2	2 (7.7%)
3	6 (23.1%)
4	6 (23.1%)
5	10 (38.5%)
Total	26 (100.0%)



The communication with the teaching staff during the course was good.	Mean	Standard Deviation
	3.8	1.3

It was clear throughout the course what was expected of me.

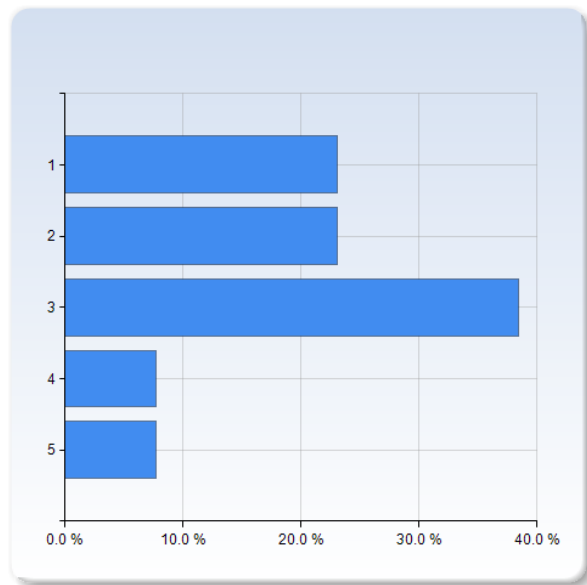
It was clear throughout the course what was expected of me.	Number of Responses
1	1 (4.0%)
2	5 (20.0%)
3	2 (8.0%)
4	8 (32.0%)
5	9 (36.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
It was clear throughout the course what was expected of me.	3.8	1.3

I have received valuable feedback from my teacher/teachers during the course.

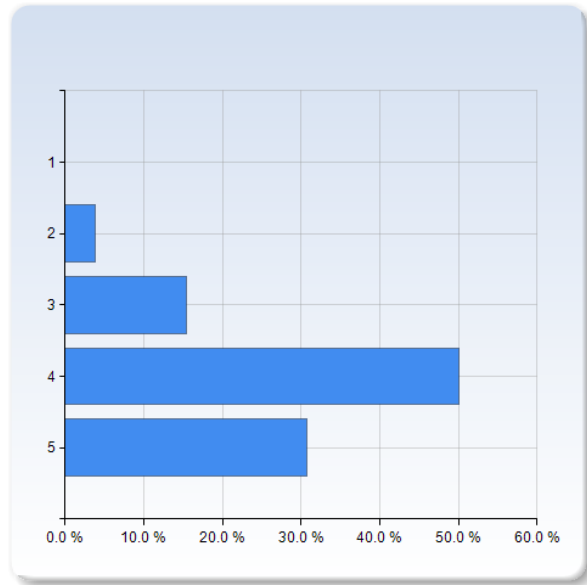
I have received valuable feedback from my teacher /teachers during the course.	Number of Responses
1	6 (23.1%)
2	6 (23.1%)
3	10 (38.5%)
4	2 (7.7%)
5	2 (7.7%)
Total	26 (100.0%)



	Mean	Standard Deviation
I have received valuable feedback from my teacher/teachers during the course.	2.5	1.2

The course had a reasonable workload.

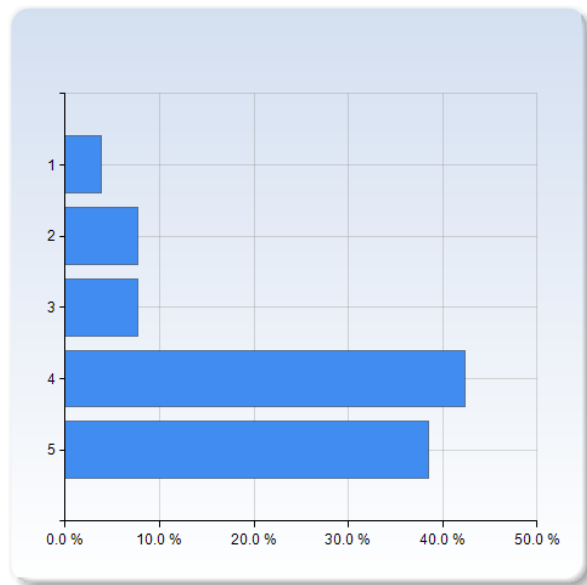
The course had a reasonable workload.	Number of Responses
1	0 (0.0%)
2	1 (3.8%)
3	4 (15.4%)
4	13 (50.0%)
5	8 (30.8%)
Total	26 (100.0%)



The course had a reasonable workload.	Mean	Standard Deviation
	4.1	0.8

The workload was evenly distributed throughout the course.

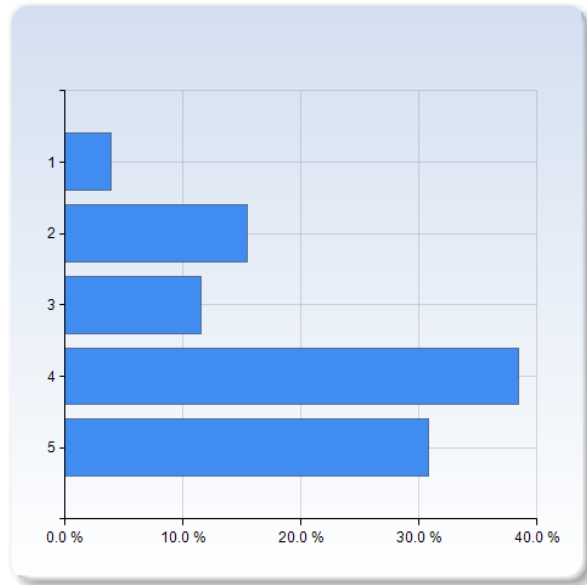
The workload was evenly distributed throughout the course.	Number of Responses
1	1 (3.8%)
2	2 (7.7%)
3	2 (7.7%)
4	11 (42.3%)
5	10 (38.5%)
Total	26 (100.0%)



The workload was evenly distributed throughout the course.	Mean	Standard Deviation
	4.0	1.1

The examination matched the contents and level of the course.

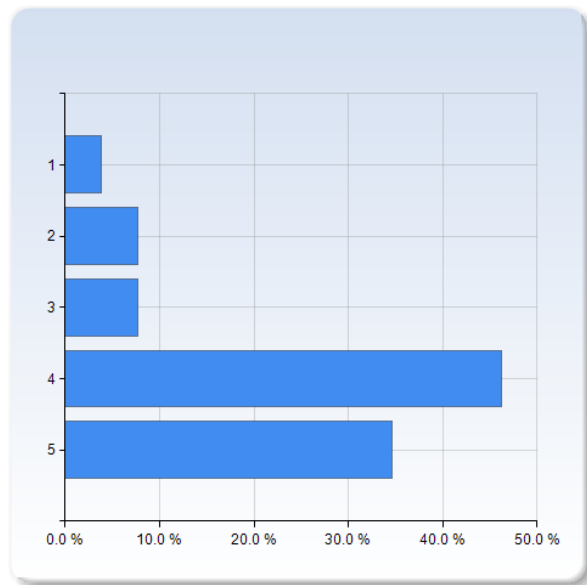
The examination matched the contents and level of the course.	Number of Responses
1	1 (3.8%)
2	4 (15.4%)
3	3 (11.5%)
4	10 (38.5%)
5	8 (30.8%)
Total	26 (100.0%)



	Mean	Standard Deviation
The examination matched the contents and level of the course.	3.8	1.2

Overall, I am satisfied with the course.

Overall, I am satisfied with the course.	Number of Responses
1	1 (3.8%)
2	2 (7.7%)
3	2 (7.7%)
4	12 (46.2%)
5	9 (34.6%)
Total	26 (100.0%)

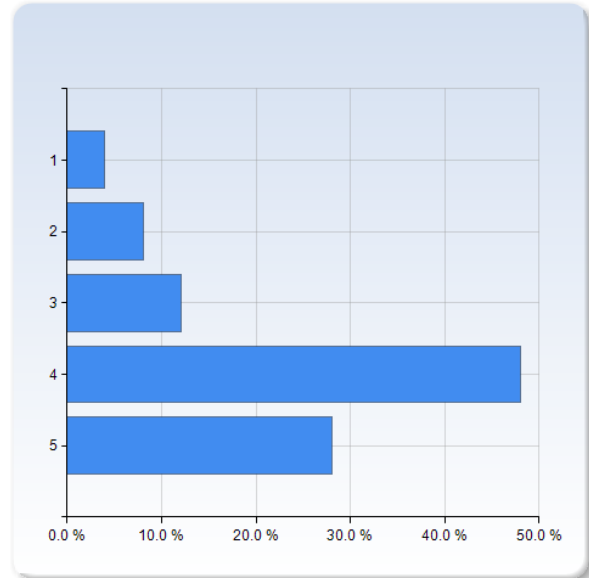


	Mean	Standard Deviation
Overall, I am satisfied with the course.	4.0	1.1

On the development of generic skills

On a scale 1-5 select the option that best matches your opinion: 1= disagree completely → 3= partly agree → 5= agree completely
 The course has increased my ability to read a mathematical text.

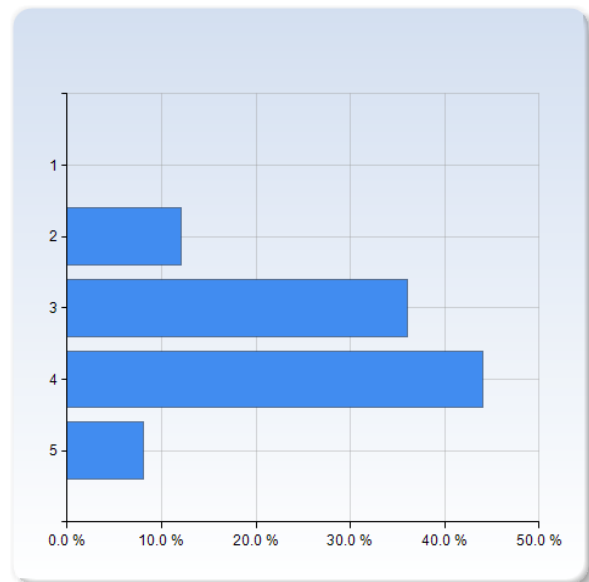
The course has increased my ability to read a mathematical text.	Number of Responses
1	1 (4.0%)
2	2 (8.0%)
3	3 (12.0%)
4	12 (48.0%)
5	7 (28.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The course has increased my ability to read a mathematical text.	3.9	1.1

The course has increased my ability to communicate the subject in writing.

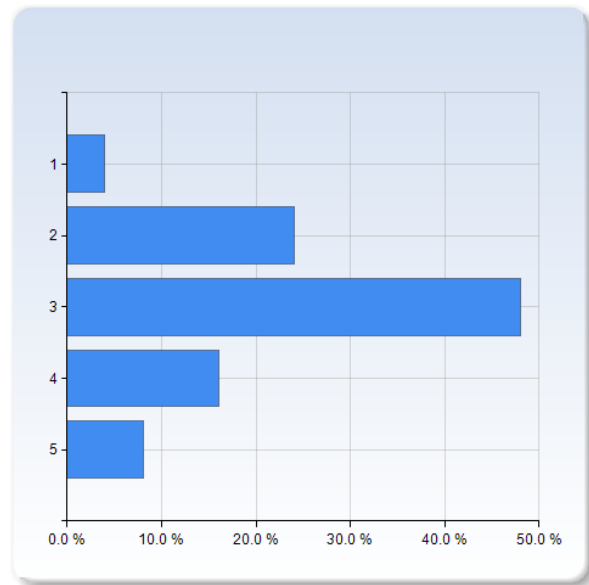
The course has increased my ability to communicate the subject in writing.	Number of Responses
1	0 (0.0%)
2	3 (12.0%)
3	9 (36.0%)
4	11 (44.0%)
5	2 (8.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The course has increased my ability to communicate the subject in writing.	3.5	0.8

The course has increased my ability to communicate the subject orally.

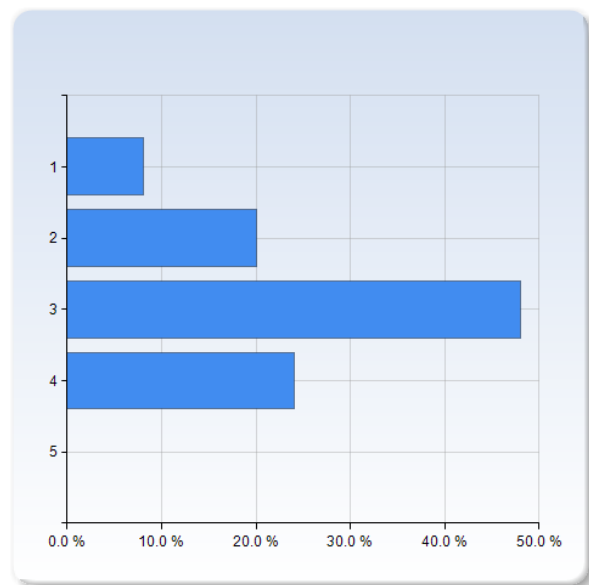
The course has increased my ability to communicate the subject orally.	Number of Responses
1	1 (4.0%)
2	6 (24.0%)
3	12 (48.0%)
4	4 (16.0%)
5	2 (8.0%)
Total	25 (100.0%)



The course has increased my ability to communicate the subject orally.	Mean	Standard Deviation
	3.0	1.0

The course has increased my ability to cooperate.

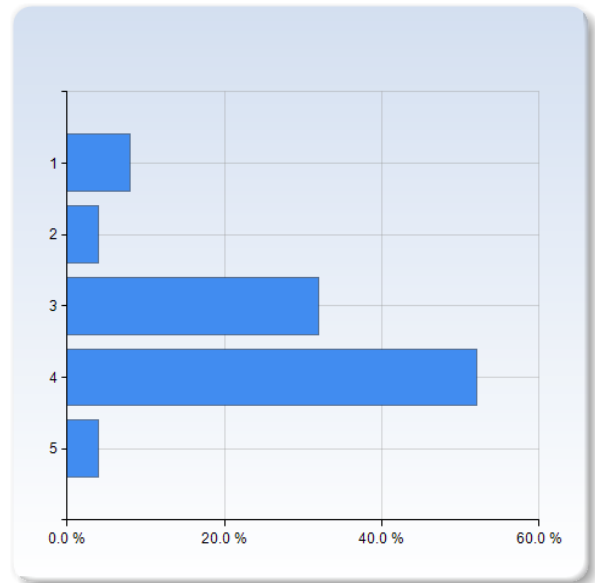
The course has increased my ability to cooperate.	Number of Responses
1	2 (8.0%)
2	5 (20.0%)
3	12 (48.0%)
4	6 (24.0%)
5	0 (0.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The course has increased my ability to cooperate.	2.9	0.9

The course has increased my ability to search and process information.

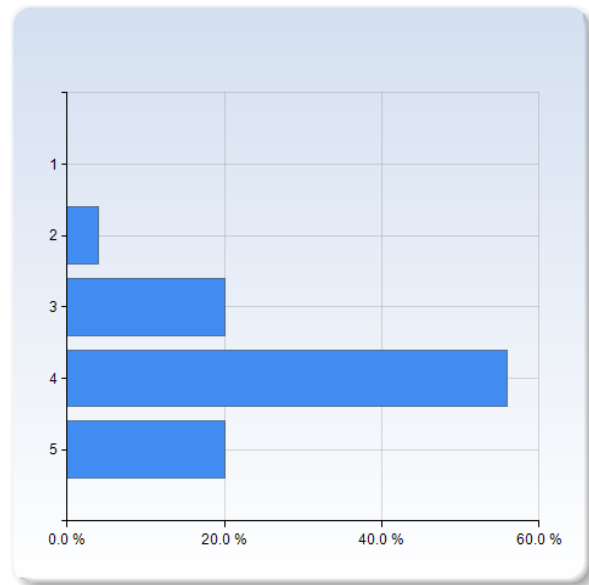
The course has increased my ability to search and process information.	Number of Responses
1	2 (8.0%)
2	1 (4.0%)
3	8 (32.0%)
4	13 (52.0%)
5	1 (4.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The course has increased my ability to search and process information.	3.4	1.0

The course has increased my ability to analyze and solve problems.

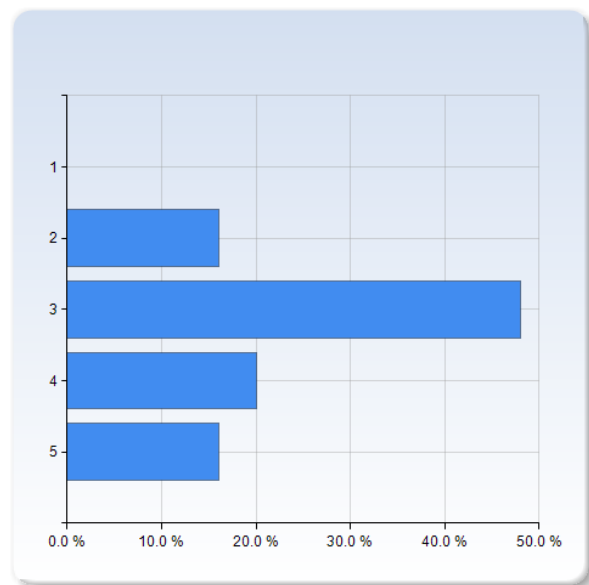
The course has increased my ability to analyze and solve problems.	Number of Responses
1	0 (0.0%)
2	1 (4.0%)
3	5 (20.0%)
4	14 (56.0%)
5	5 (20.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
The course has increased my ability to analyze and solve problems.	3.9	0.8

As a result of this course, I feel confident about tackling unfamiliar problems.

As a result of this course, I feel confident about tackling unfamiliar problems.	Number of Responses
1	0 (0.0%)
2	4 (16.0%)
3	12 (48.0%)
4	5 (20.0%)
5	4 (16.0%)
Total	25 (100.0%)

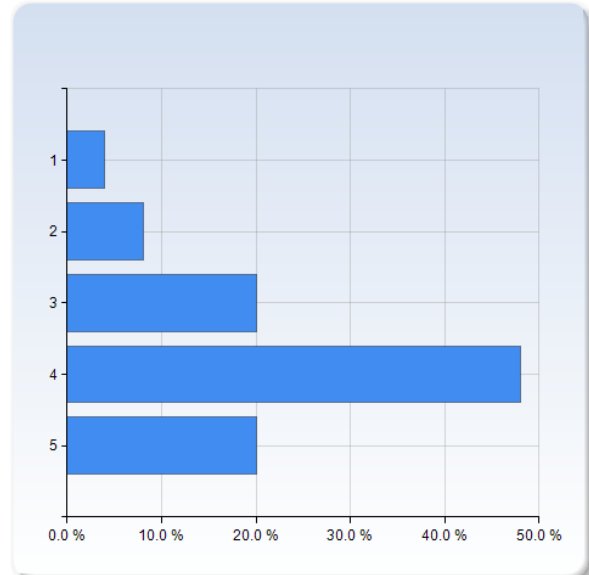


	Mean	Standard Deviation
As a result of this course, I feel confident about tackling unfamiliar problems.	3.4	1.0

On the programming project

On a scale 1-5 select the option that best matches your opinion: 1= disagree completely → 3= partly agree → 5= agree completely
 The programming project is closely related to the course contents.

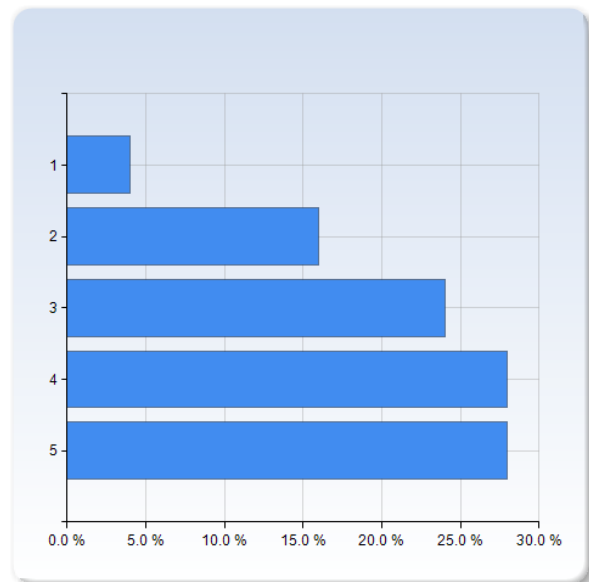
The programming project is closely related to the course contents.	Number of Responses
1	1 (4.0%)
2	2 (8.0%)
3	5 (20.0%)
4	12 (48.0%)
5	5 (20.0%)
Total	25 (100.0%)



The programming project is closely related to the course contents.	Mean	Standard Deviation
	3.7	1.0

Owing to the programming project, I have increased my programming skills in Python.

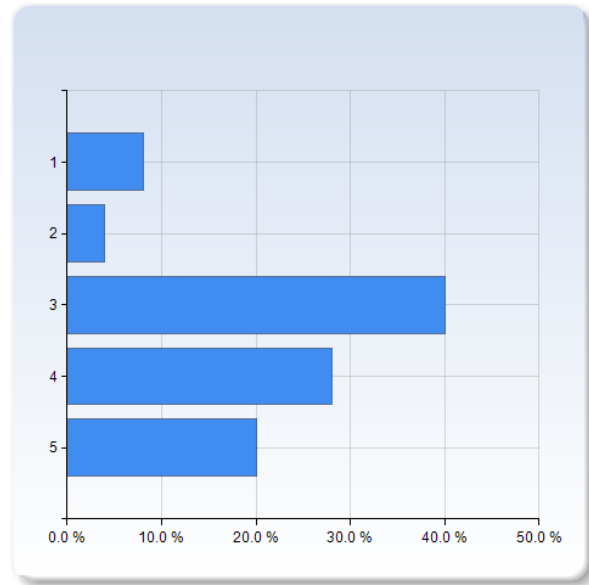
Owing to the programming project, I have increased my programming skills in Python.	Number of Responses
1	1 (4.0%)
2	4 (16.0%)
3	6 (24.0%)
4	7 (28.0%)
5	7 (28.0%)
Total	25 (100.0%)



Owing to the programming project, I have increased my programming skills in Python.	Mean	Standard Deviation
	3.6	1.2

I believe that the programming project has been valuable for my future learning.

I believe that the programming project has been valuable for my future learning.	Number of Responses
1	2 (8.0%)
2	1 (4.0%)
3	10 (40.0%)
4	7 (28.0%)
5	5 (20.0%)
Total	25 (100.0%)



I believe that the programming project has been valuable for my future learning.	Mean	Standard Deviation
	3.5	1.1

What did you appreciate most with the course?

What did you appreciate most with the course?

The course was well organized and the pace in which the course was held, was fine. And of course, Kjell is a very good mathematician.

Kjell

The clear and good examples during lectures.

The mathematics that is especially needed for the physics, or powerful general methods, like method of least squares, gram-schmidt, eigenvalues etc.

The fact that the lectures was in person and the course literature, it was very short but packed with information so you did not need a big book.

Great example questions in the text book. Enjoyed challenging but achievable exams.

The lecturer lectured as normal even though it was partly over Zoom. All teaching staff responded quickly and with valuable answers on Canvas when asked questions.

The lectures.

The literature is very well-written and contains an adequate mix of theory, proofs, intuition and examples. The lectures were also well-structured and complemented the literature well (highlighting the most important points and common pitfalls in calculations). The programming project was also quite interesting and were at a suitable level considering this course is usually taken just after NUMA01.

The structure of the lectures, the material and the seminars, it was all really helpful and clear for me

Very clear lectures

I think the lectures did a good job of mixing theoretical aspects (mainly proofs) with more pragmatic ones (examples, applications). Giving both a fairly rigorous and intuitive understanding on the concepts, without getting stuck on details too much and also showing how to use the theorems in practice.

Course literature was on point, solutions to the exercise were good

The structure

The lectures were clearly structured and easy to follow and it was always clear what the topic was at the time. It was easy to anonymously ask questions during the seminars and they were answered clearly.

Very structured which has been great. The solutions that were posted same time as the seminars helped me a lot. I don't have much use of the seminars because I usually don't follow and loose focus easily so the solutions have been great to check instead. Saves me a lot of time as well compared looking at the seminars for 2 hours. Which means more time for me to do the exercises.

What do you think should be improved?

What do you think should be improved?

The course literature has good content but its quite hard to read and follow the text. You should highlight the important parts and perhaps add some pictures of the geometrical interpretation to help with understanding and intuition.

- I wish that Kjell could communicate more with the students. But that would probably include some change in Kjells personality and i guess that's impossible.

- The book (and course) is too proof-heavy. I counted he number of definitions, theorems and proofs in the book to 283 and that's simply too much.

- Even though this is a course in pure mathematics, some discussion about how it can be applied to real world problems, would be nice. Perhaps more focus on change of basis

The seminars didn't work for me because they weren't interactive. They were either hard to follow or too slow.

The literature could use some more intuitive explanations. Nothing too fancy but some parts could definitely have used more figures and illustrations (when possible).

I think when showing proofs the lecturer need to go through them more slowly and thoroughly. Since we felt very intimidated to ask questions. Sometimes the speed of the proof would be greater than us trying to understand it. By the time we understand the proof on the board the lecturer would have moved on to the next part.

The exam was not was I expected. The problems were harder then other exams and was not on the same subjects so it was harder which I was tolled it was not going to be.

Seminar leader is not well enough prepared.

Better communication with the teacher. More easily understandable text book. Less rude teacher (he made us feel stupid if we asked a question). A way to ask questions if you were on zoom for a lecture.

Examinations were too hard. Make them slightly easier.

No major improvements are necessary in my opinion. If anything, one could consider changing one task in the programming assignment. At the moment, two out of three tasks relate to topics covered at the very end of the course (recurrence problems and quadratic forms). At this late stage of the course, most students probably wish to focus on the exam and not on the programming assignment.

The assignment was a bit hard and it was a bit frustrated that this was not a programming course, but still it felt like it was that part that everyone struggled with the most. Since their was no explanation on how to program for this type of math, and when we asked for help, the impression was that it was a part of the assignment to solve things by yourself. Even though I understand that it is really good to find the answer yourself, sometimes it's better to get guidelines and direct help when asked for it. So maybe not making the programming part of the assignment that difficult.

Timing of programming project

The seminars were a bit slow-paced in my opinion, a lot of time was spent on mundane calculations and not so much discussing intuition for solving problems and sometimes harder/theoretical problems had to be skipped due to lack of time.

Seminar was not necessary and very slow paced and boring

The lecture could be a little different from the litterateur

Sometimes it was a bit hard to follow the course online when the equipment did not work and it was not always easy to communicate during the lectures when following them online.

The lectures were structured and good in that sense but they could have been more educational. It felt like Kjell just read from the book and did not really explain things.

Have you during this course experienced course literature, staff or teaching methods to be discriminatory in any way (gender, ethnicity, etc.)?

Have you during this course experienced course literature, staff or teaching methods to be discriminatory in any way (gender, ethnicity, etc.)?

Not in any way.

no

No

No

Literature is very nicely structured. I liked the compendium

No

No.

No.

No.

No

No

no

No

No.

No, not that I can think of.