



LUND UNIVERSITY
Faculty of Science

Centre for Mathematical Sciences
Division of Mathematics and Numerical Analysis

Course Analysis for MATB21 Analysis in Several Variables 1, Autumn 2021

Course Information

Lecturer: Anders Olofsson

Teaching assistants: Girola, Daniele

Number of students: 111 students

82 newly registered and 29 re-registered.

20 students answered the course evaluation, 3 of them are enrolled on Bachelor's Programme in Mathematics and 17 of them are enrolled on Bachelor's Programme in Theoretical Physics, Astronomy.

Examination

Project: 79 students passed.

Written examination: 51 students passed.

- Ordinary examination 29/10 2021: 71 students participated and 30 of them passed.

- Resit examination 20/11 2021: 48 students participated and 21 of them passed.

Final grades:

In all, 52 students, including 8 re-registered students, have got their final grade.

28 passed with distinction.

24 passed.

Course Evaluation

Summary of student's answers: See separate document.

Teachers' comments: See separate document.

Kurskommentar Flervariabelanalys 1 ht 2021
Anders Olofsson

Resultatet på kursen är 25 stycken G och 29 stycken VG fördelat på två stycken tentamenstillfällen. De inkomna kursvärderingarna var positiva (20 stycken).

Kursen genomfördes med föreläsningar i hörsal och skriftlig sals-tentamen. Föreläsningarna dator-sändes med Zoom. Räkneövningar sändes enbart per Zoom.

Det är tydligt att korona-smittan och relaterade restriktioner har straffat utbildningen.

Translation. The result of the course was 25 pieces of G and 29 pieces of VG distributed over two exams. The course evaluations were positive (20 pieces).

The course was carried out with lectures in lecture hall and regular written exam. The lectures were sent over Zoom. The exercise classes were held over Zoom only.

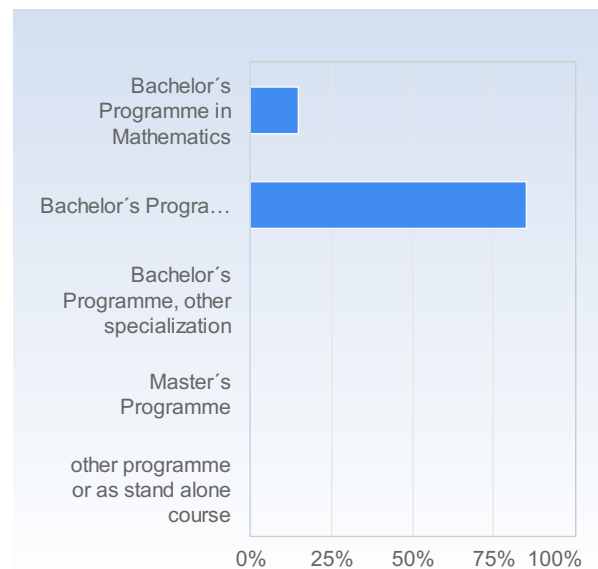
It is apparent that the corona-disease and related restrictions have penalized the education.

Analysis in several variables I, autumn 2021

Answer Count: 21

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 (15,0%)
Bachelor's Programme in Physics, Theoretical Physics, Astronomy	17 (85,0%)
Bachelor's Programme, other specialization	0 (0,0%)
Master's Programme	0 (0,0%)
other programme or as stand alone course	0 (0,0%)
Total	20 (100,0%)

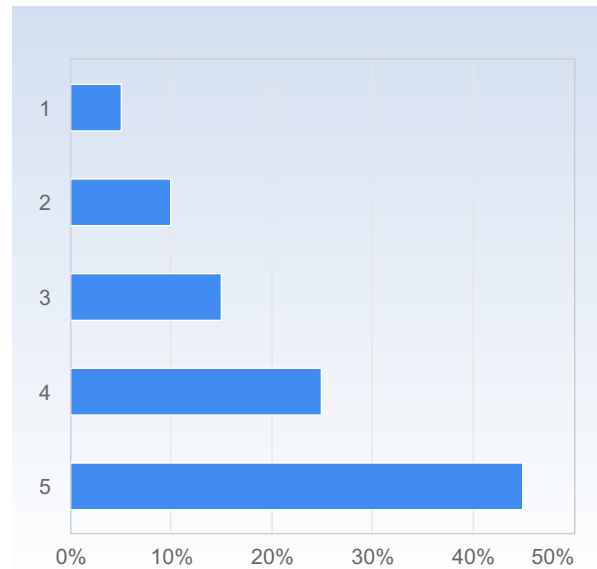


	Mean	Standard Deviation
I have studied this course as part of	1,9	0,4

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.

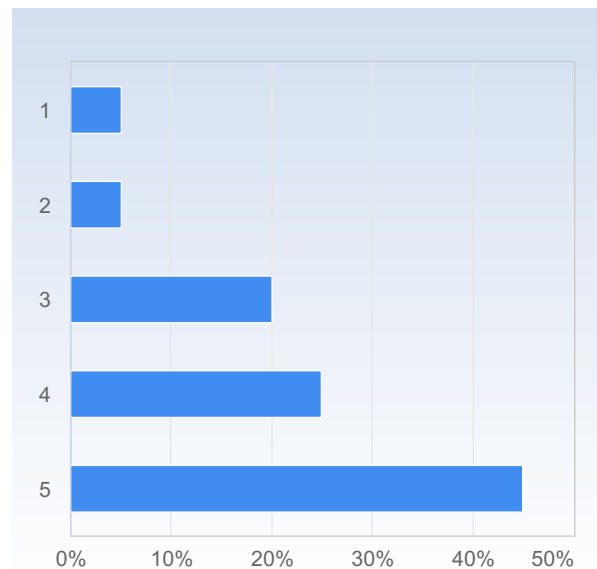
2. <input type="checkbox"/> My prior knowledge has been sufficient to assimilate the contents of this course.	Number of responses
1	1 (5,0%)
2	2 (10,0%)
3	3 (15,0%)
4	5 (25,0%)
5	9 (45,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
2. <input type="checkbox"/> My prior knowledge has been sufficient to assimilate the contents of this course.	4,0	1,2

3. I have participated actively in the course.

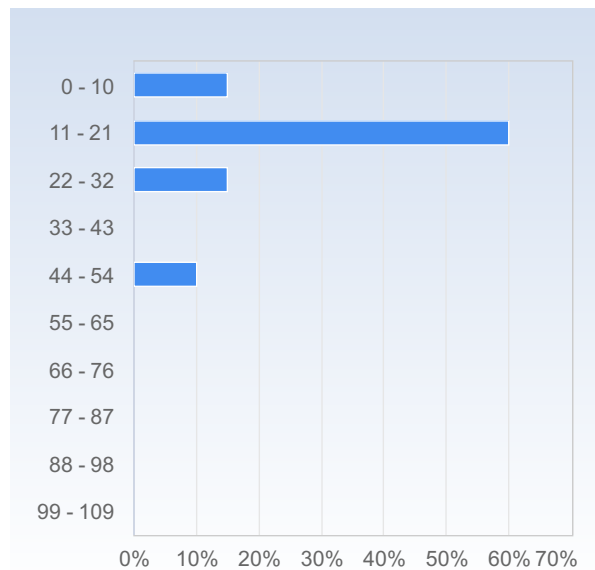
3. <input type="checkbox"/> I have participated actively in the course.	Number of responses
1	1 (5,0%)
2	1 (5,0%)
3	4 (20,0%)
4	5 (25,0%)
5	9 (45,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
3. <input type="checkbox"/> 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
0 - 10	3 (15,0%)
11 - 21	12 (60,0%)
22 - 32	3 (15,0%)
33 - 43	0 (0,0%)
44 - 54	2 (10,0%)
55 - 65	0 (0,0%)
66 - 76	0 (0,0%)
77 - 87	0 (0,0%)
88 - 98	0 (0,0%)
99 - 109	0 (0,0%)
Total	20 (100,0%)



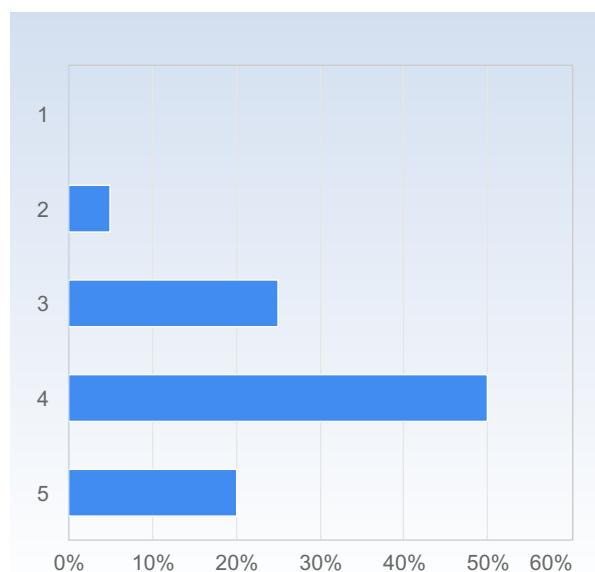
	Mean	Standard Deviation
Average number of hours spent in total on the course per week (including scheduled activities):	20,3	9,9

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.

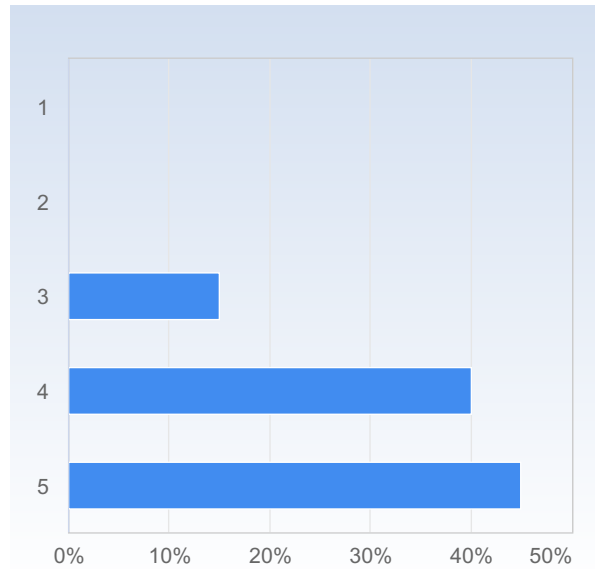
The way the course was taught and organised suited me.	Number of responses
1	0 (0,0%)
2	1 (5,0%)
3	5 (25,0%)
4	10 (50,0%)
5	4 (20,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The way the course was taught and organised suited me.	3,9	0,8

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

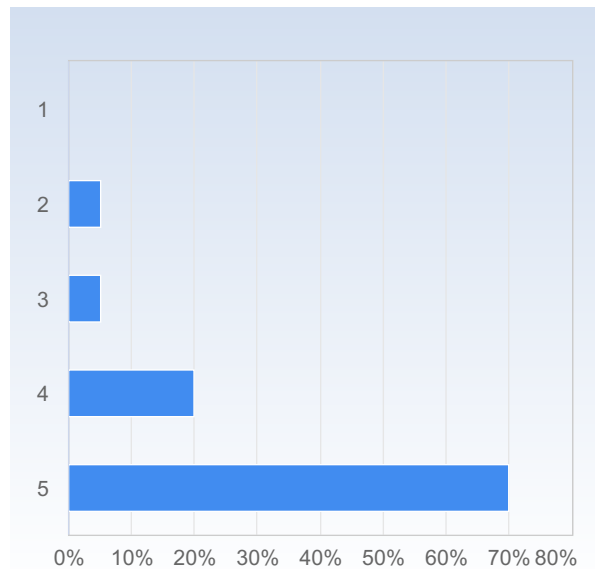
The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	3 (15,0%)
4	8 (40,0%)
5	9 (45,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.	4,3	0,7

The lectures were valuable for my learning.

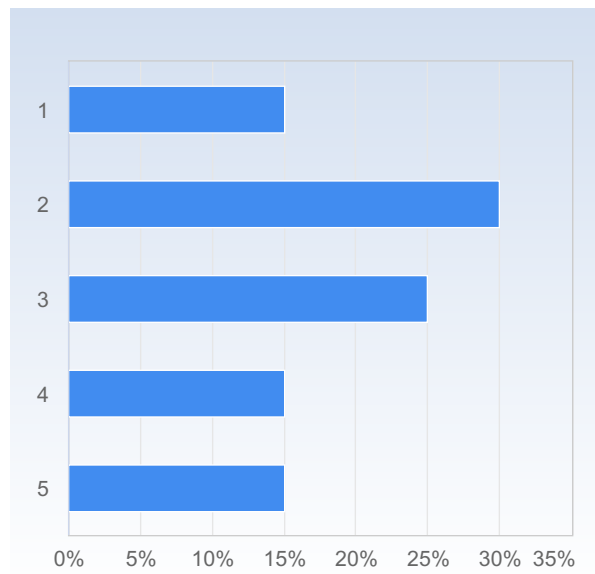
The lectures were valuable for my learning.	Number of responses
1	0 (0,0%)
2	1 (5,0%)
3	1 (5,0%)
4	4 (20,0%)
5	14 (70,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The lectures were valuable for my learning.	4,6	0,8

The seminars were valuable for my learning.

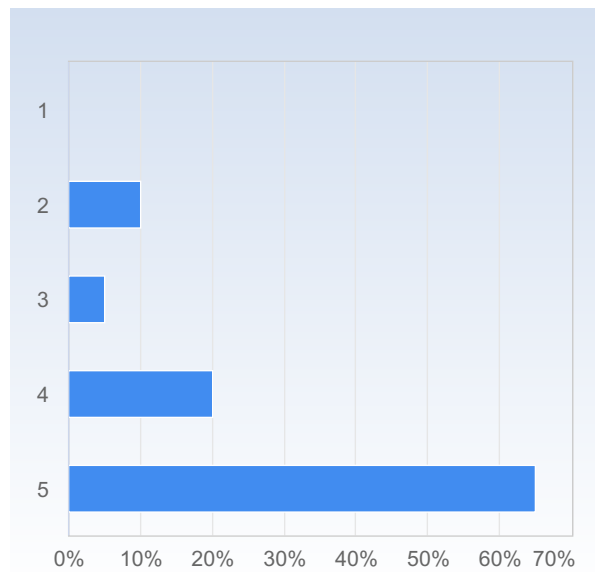
The seminars were valuable for my learning.	Number of responses
1	3 (15,0%)
2	6 (30,0%)
3	5 (25,0%)
4	3 (15,0%)
5	3 (15,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The seminars were valuable for my learning.	2,9	1,3

Studying on my own was valuable for my learning.

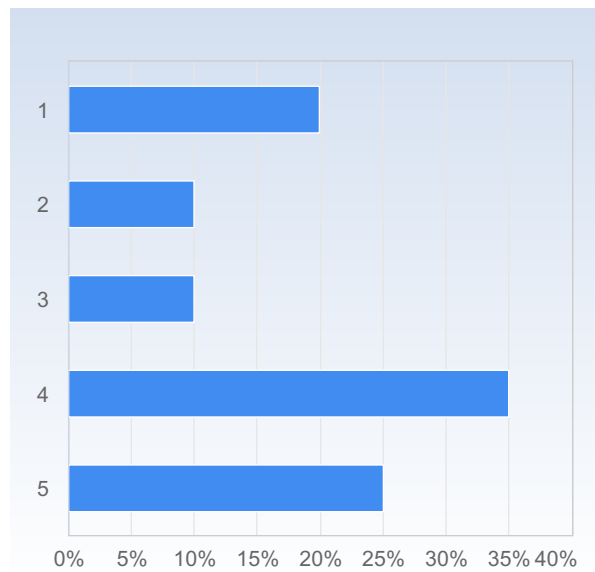
Studying on my own was valuable for my learning.	Number of responses
1	0 (0,0%)
2	2 (10,0%)
3	1 (5,0%)
4	4 (20,0%)
5	13 (65,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
Studying on my own was valuable for my learning.	4,4	1,0

The course literature/material was a valuable learning resource.

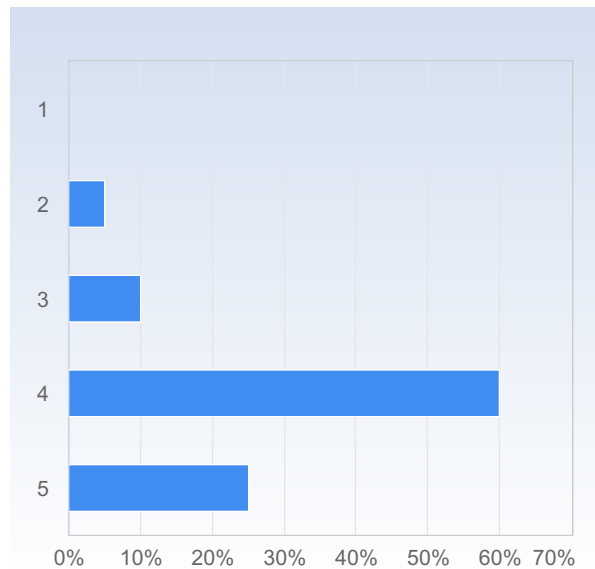
The course literature/material was a valuable learning resource.	Number of responses
1	4 (20,0%)
2	2 (10,0%)
3	2 (10,0%)
4	7 (35,0%)
5	5 (25,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course literature/material was a valuable learning resource.	3,4	1,5

The information I received before the course start was satisfactory.

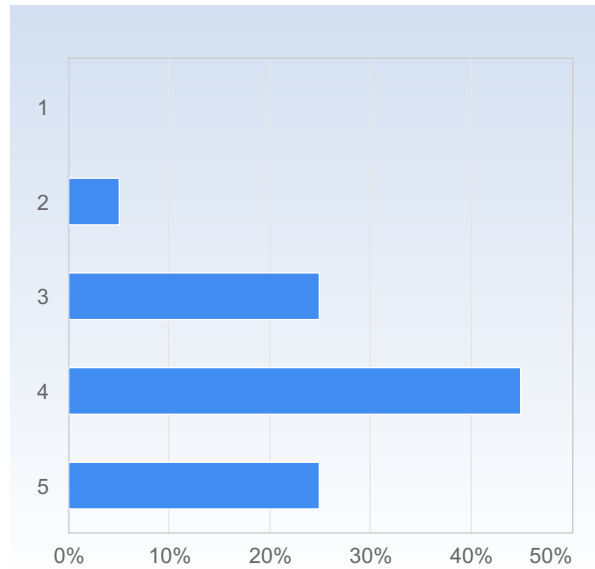
The information I received before the course start was satisfactory.	Number of responses
1	0 (0,0%)
2	1 (5,0%)
3	2 (10,0%)
4	12 (60,0%)
5	5 (25,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The information I received before the course start was satisfactory.	4,1	0,8

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

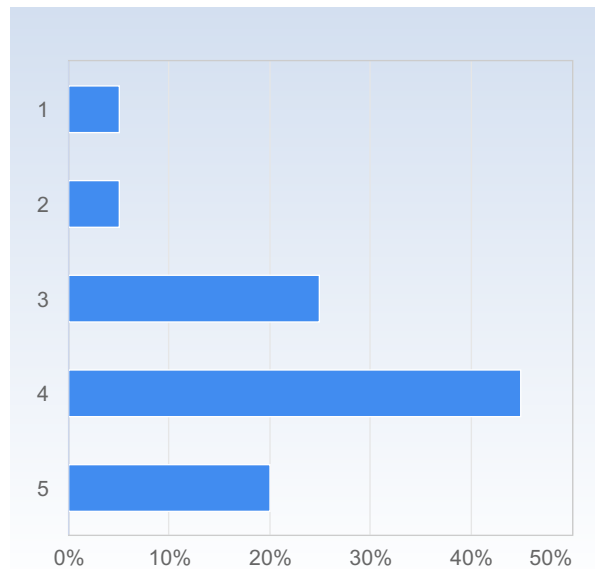
The communication with the teaching staff during the course was good.	Number of responses
1	0 (0,0%)
2	1 (5,0%)
3	5 (25,0%)
4	9 (45,0%)
5	5 (25,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The communication with the teaching staff during the course was good.	3,9	0,9

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

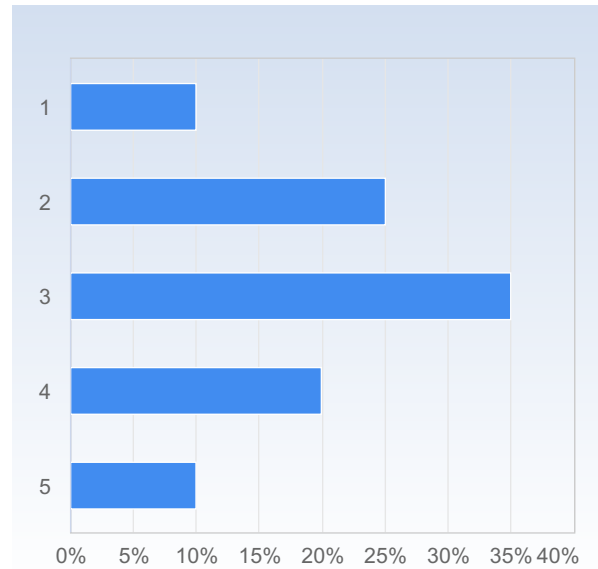
It was clear throughout the course what was expected of me.	Number of responses
1	1 (5,0%)
2	1 (5,0%)
3	5 (25,0%)
4	9 (45,0%)
5	4 (20,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
It was clear throughout the course what was expected of me.	3,7	1,0

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

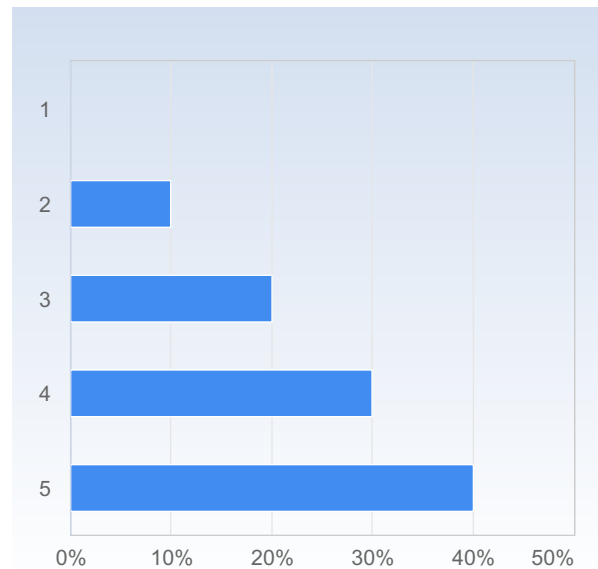
I have received valuable feedback from my teacher/teachers during the course.	Number of responses
1	2 (10,0%)
2	5 (25,0%)
3	7 (35,0%)
4	4 (20,0%)
5	2 (10,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
I have received valuable feedback from my teacher/teachers during the course.	3,0	1,1

The course had a reasonable workload.

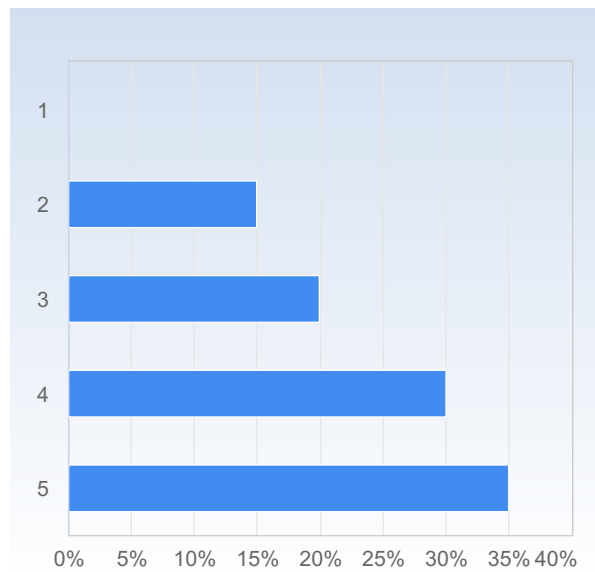
The course had a reasonable workload.	Number of responses
1	0 (0,0%)
2	2 (10,0%)
3	4 (20,0%)
4	6 (30,0%)
5	8 (40,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course had a reasonable workload.	4,0	1,0

The workload was evenly distributed throughout the course.

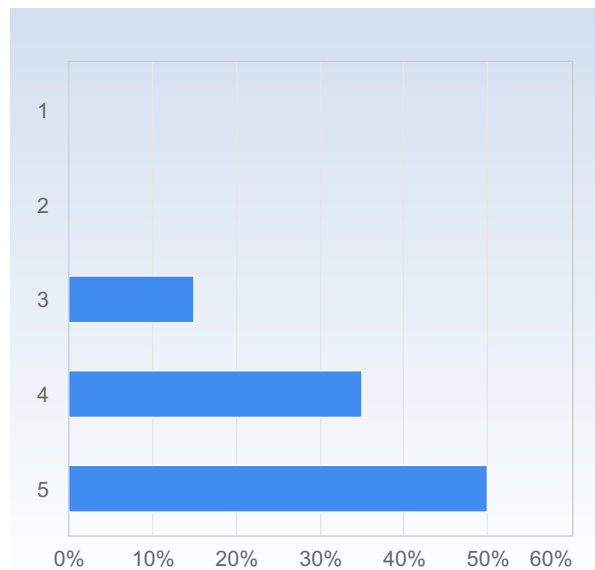
The workload was evenly distributed throughout the course.	Number of responses
1	0 (0,0%)
2	3 (15,0%)
3	4 (20,0%)
4	6 (30,0%)
5	7 (35,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The workload was evenly distributed throughout the course.	3,9	1,1

The examination matched the contents and level of the course.

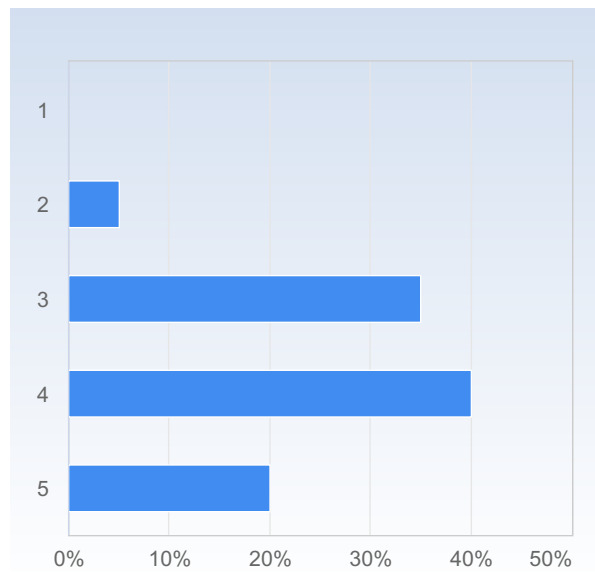
The examination matched the contents and level of the course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	3 (15,0%)
4	7 (35,0%)
5	10 (50,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The examination matched the contents and level of the course.	4,4	0,7

Overall, I am satisfied with the course.

Overall, I am satisfied with the course.	Number of responses
1	0 (0,0%)
2	1 (5,0%)
3	7 (35,0%)
4	8 (40,0%)
5	4 (20,0%)
Total	20 (100,0%)



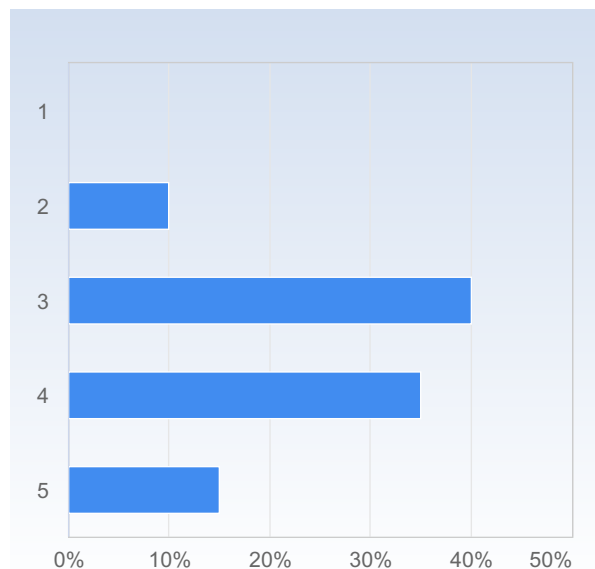
	Mean	Standard Deviation
Overall, I am satisfied with the course.	3,8	0,9

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.

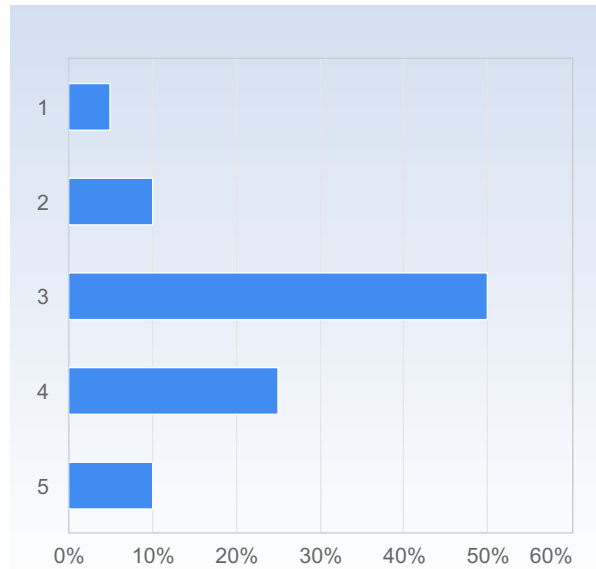
The course has increased my ability to read a mathematical text.	Number of responses
1	0 (0,0%)
2	2 (10,0%)
3	8 (40,0%)
4	7 (35,0%)
5	3 (15,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to read a mathematical text.	3,6	0,9

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

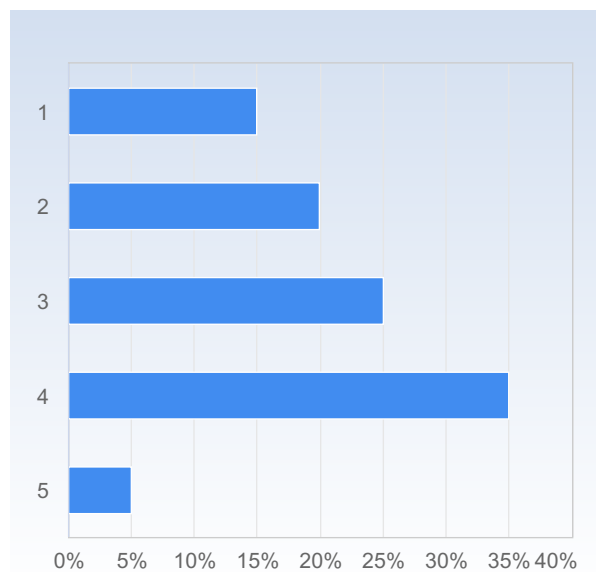
The course has increased my ability to communicate the subject in writing.	Number of responses
1	1 (5,0%)
2	2 (10,0%)
3	10 (50,0%)
4	5 (25,0%)
5	2 (10,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to communicate the subject in writing.	3,3	1,0

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

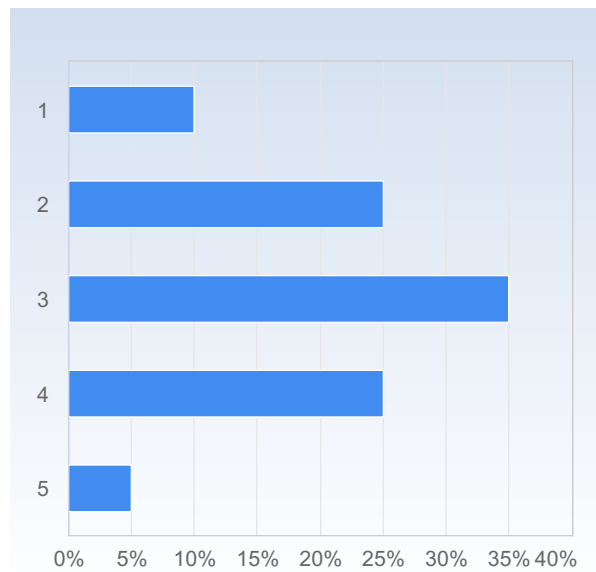
The course has increased my ability to communicate the subject orally.	Number of responses
1	3 (15,0%)
2	4 (20,0%)
3	5 (25,0%)
4	7 (35,0%)
5	1 (5,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to communicate the subject orally.	3,0	1,2

The course has increased my ability to cooperate.

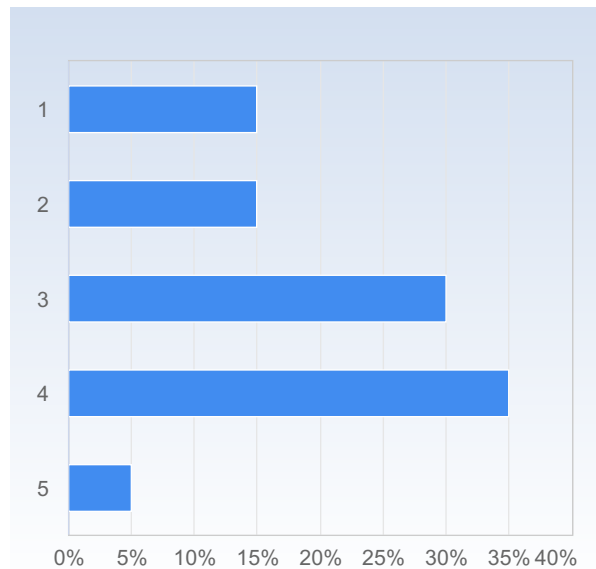
The course has increased my ability to cooperate.	Number of responses
1	2 (10,0%)
2	5 (25,0%)
3	7 (35,0%)
4	5 (25,0%)
5	1 (5,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to cooperate.	2,9	1,1

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

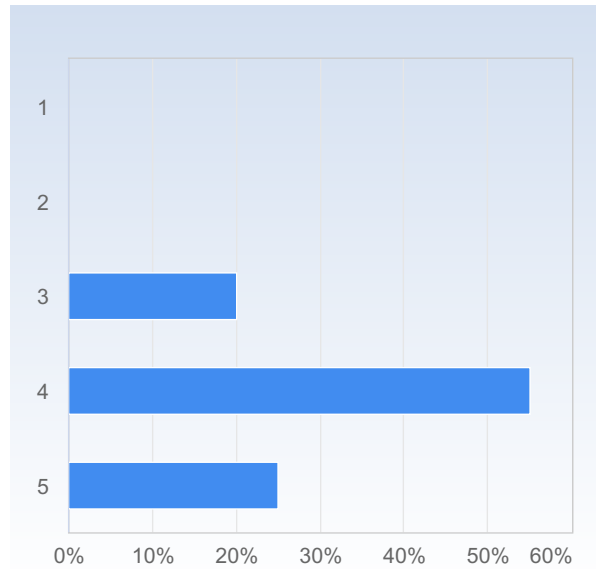
The course has increased my ability to search and process information.	Number of responses
1	3 (15,0%)
2	3 (15,0%)
3	6 (30,0%)
4	7 (35,0%)
5	1 (5,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to search and process information.	3,0	1,2

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

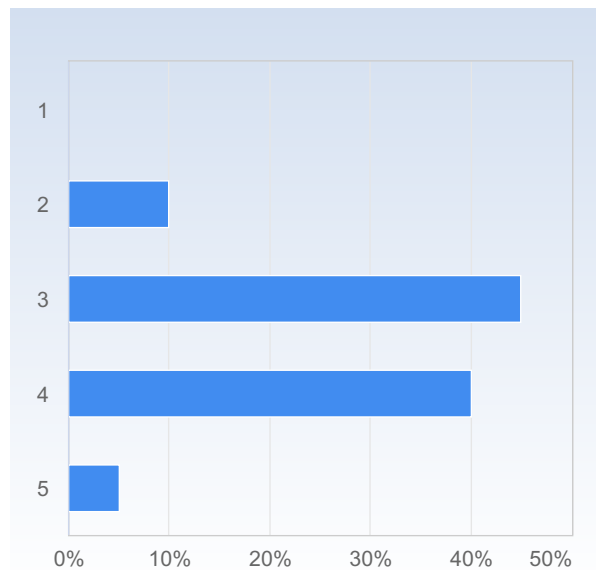
The course has increased my ability to analyze and solve problems.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	4 (20,0%)
4	11 (55,0%)
5	5 (25,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
The course has increased my ability to analyze and solve problems.	4,1	0,7

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	2 (10,0%)
3	9 (45,0%)
4	8 (40,0%)
5	1 (5,0%)
Total	20 (100,0%)



	Mean	Standard Deviation
As a result of this course, I feel confident about tackling unfamiliar problems.	3,4	0,8

What did you appreciate most with the course?

What did you appreciate most with the course?

I liked that we didn't spend time on proving obvious things (as is done in a lot of other courses) and spent more time on applications of the theory.

The lectures, and how many concrete examples were given. It was nice to actually get such an intuitive view of how the theoretical parts relate to their respective contexts. It was also really nice to get proper statements and explanations of the major theorems during the lectures, as the course book is awful and did a very bad job with that. The lectures did the course quite differently from the book, which was a very good thing. It was also really nice to get old exams handed out during the course as these proved to be a valuable resource for actually learning the material of the course.

The way the work was distributed throughout the course was good. I never found myself in a situation where I was stressed because I had too much work to get done.

The teaching and the fact that you got the help you needed

Solving old exam problems.

I found the frequency of introducing new concepts alongside solving problems involving previously taught concepts very well executed. I tried to do spaced repetition revision on my own (revising the lecture right after it's done, then reading through my revision notes one week later, then three weeks after that) so that might have aided my impression of well-executed timing, but it seems like the course does a good job referencing material that was already covered so it always stays in one's memory.

The previous exams provided.

The content.

The 3D shapes.

Problemlösning

The large amount of examples during the lectures was very helpful in understanding the content.

The lectures and seminars matched well, and there were many exercises and past papers to practice applying theory from the course with.

The seminars were quite interactive, and the methods and solutions were explained in a nice and detailed way.

Good and pedagogical lectures by Anders. Excellent camera work during the streamed lectures, with added comments and answers - very much appreciated! Thanks!

The lack of proofs and the overwhelming amount of examples

What do you think should be improved?

What do you think should be improved?

We were sometimes taught different techniques on the lectures than those in the book, i.e. for determining the character of a critical point. Although these methods were more efficient than those in the book, it was harder to understand the theory when you only had your notes to rely on and no literature. I would have liked if the lectures covering these different techniques were recorded and uploaded on canvas so that they could have been viewed again if you didn't get it the first time.

The course literature should definitely be changed. The book is very poorly written, messy to read, and relies too much on intuitive non-rigorous arguments to fit a course that is supposedly about analysis and not just calculus.

Maybe because "Analysis in several variables 1" is a new type of course. (I believe it was recently split into two courses???) But I found it hard to know what was expected of me on the examination. During the exam-week I looked a lot on the old exams and did not find that many that gave me a clear picture of what the important parts of the course was. But as I said, maybe because the course is "new".

can't think of anything right now

I wish there was more topology. I feel like we got a very small part of analysis, and not the full picture. The course book is really bad and reading it didn't help me to understand the theory.

I understand that there is a certain benefit in keeping a lot of the mathematical jargon out of the course since it isn't necessary for solving many of the problems we encounter, but it feels like teaching a bit more theory might be desirable.

The course is very self-contained, which is positive because one feels on track while listening to it, but the downside is that it feels like you are on this very danger-averse choo-choo train with clean and straight forward problems, while the rest of multivariable analysis seems like a huge and scary roller-coaster ride through the unknown. The experience of picking up a non-Adams multivariable textbook is quite staggering, since there is a pretty big conceptual difference between what is covered within the course and what is "out there".

Some of the concepts seem to be covered in tandem with concepts introduced in Linear Algebra 2, such as the treatment of minima/maxima of functions by examining the quadratic form of second order partial derivatives, but it might be helpful to at least mention the Hessian matrix at some point.

I don't want to ramble on too long, so my final remark here is that one way to keep the friendly nature of this course while allowing the more active students to get some additional direction from the lecturer would be to have open office hours.

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The structure - it would have been nice to have some time to revise for the exam, but we covered new topics even the week prior to the exam. Nothing comes to mind.

I didn't attend any lectures because they started at 08:00!!!

Studietakten gick fort vilket gjorde det svårt att hänga med och kunde lätt leda till att man snart var katastrofalt långt efter vilket gjorde det stressande. Ett bekymmer var också att den gick parallellt med lineär algebra 2 vilket gjorde att man var tvungen att försöka lära sig två saker samtidigt vilket i sin tur gjorde det ännu svårare att hänga med. När behörigheten till efterföljande kurser ovanpå allt var beroende av att man klarat både lineär algebra 2 och denna kurs så blev det ytterligare stressande vilket i sin tur inverkade negativt på studierna.

The programming project! Hardly any information was given about how it would work, all we were told was to start working with it as soon as possible. This was however not possible since the tasks given related to material that was not explained in the course until much later. For instance, the material related to the final task was not lectured until the final week of the project, which made the task unnecessarily difficult if one wanted to be done in reasonable time.

We were still covering new content during the week before the exam, instead of focussing only on revision.

It would be much appreciated if we could have a couple of sessions where we could discuss or get help on a programming assignment.

The seminar TA could explain solutions and concepts used in solutions better

.

Maybe having exercise sessions where you can show up and ask for help with specific problems, instead of the seminars

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.)?
No.
No, I have not.
No, never.
no
No
No.
When questions were asked in class, the answer would usually follow after a protracted sequence of "yes, yes, yes" which sounds dismissive. The majority of questions asked in the course was asked by one woman, although I assume that it is not with malicious intentions, but it does not look good and can feel shit to be subjected to.
No.
No.
Nej
Sometimes the lecturer would talk swedish for a while before switching back to english, which might have been annoying for international students. Generally, however, this was not a problem since he only translated a single word or phrase.
no
N/A
PK-fråga!! Ta bort!
Nah
.
no