

# Course analysis – MATB23 VT21

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**Summary:** The course survey only had 9 respondents. For comparison, 40 students took the written exam. The following analysis therefore seems more indicative than conclusive.

In comparison to the spring semester 2020, the course appears to have been at least as well organized. A notable difference is that the reported activity level among students is much lower. This is taken as evidence for fatigue from covid restrictions and off campus teaching for extensive time. This is also mentioned in the free text comments.

Teachers and students seem to agree that there are some problems with the current course literature. (Students have also communicated this feedback independently of this survey.) It is my opinion that the book gives reasonable explanations on much of the material, but also fails to discuss or even point out some difficulties in the formalization of ideas. As a first example, the definition of arc length is severely flawed. This would be less of an issue if interested students were offered a continuation course on “advanced calculus”. My approach to this problem has generally been to follow the book, but also to point out and fill in whatever gaps I see.

No students reported elements of discrimination.

**Number of students:** According to Canvas,  $61 + 21 = 82$  Ladok students, distributed over the two sections MATB23, ÄMAD03.

**Anomalies:** All teaching and examination was conducted online via Zoom. The written exam was replaced by a take home exam, complemented with a short oral follow up.

**Exam results:** The exam results are presented in the table below. The pass rate was 42.5%. 17.5% of the total students achieved a pass with distinction<sup>1</sup>. All students qualified for an oral exam have also passed it.

Course section	MATB23	ÄMAD03
# submissions	30	10
# U	17	6
# G	7	4
# VG	6	0 <sup>1</sup>

Table 1: Results on the regular exam, broken down into sections.

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<sup>1</sup>This excludes students in section ÄMAD03, since the grade pass with distinction for this course is based on more than this single exam result.

## Results of course survey

9 students answered. These were from the Bachelor's programmes in Mathematics (6 students), Physics, Theoretical Physics, Astronomy (2 students), and other specializations (1 student).

Students were asked to estimate the "Average number of hours spent in total on the course per week (including scheduled activities)". The average was  $\mu = 13.9$ , and the standard deviation  $\sigma = 9.2$ .

The following statements were also graded on a scale from 1 to 5, where 1 = disagree completely  $\rightarrow$  3 = partly agree  $\rightarrow$  5 = agree completely. The table shows the average, standard deviation, and as a reference the average from the previous spring semester.

Statement	$\mu$	$\sigma$	$\mu_{VT20}$
My prior knowledge has been sufficient to assimilate the contents of this course.	4.0	0.7	4.2
I have participated actively in the course.	3.3	1.3	3.9
The way the course was taught and organised suited me.	3.8	1.0	3.2
The number of teacher lead activities (lectures, seminars etc.) has been satisfactory.	4.3	1.0	3.9
The lectures were valuable for my learning.	4.0	0.8	2.9
The seminars were valuable for my learning.	4.1	1.1	3.4
Studying on my own was valuable for my learning.	4.5	0.5	4.4
The course literature/material was a valuable learning resource.	3.6	1.3	3.1
The information I received before the course start was satisfactory.	4.2	0.8	3.2
The communication with the teaching staff during the course was good.	4.6	0.5	3.4
It was clear throughout the course what was expected of me.	4.3	1.0	3.3
I have received valuable feedback from my teacher/teachers during the course.	3.5	1.5	2.4
The course had a reasonable workload.	4.0	0.8	3.9
The workload was evenly distributed throughout the course.	4.1	1.1	4.0
The examination matched the contents and level of the course.	4.6	0.5	4.1
Overall, I am satisfied with the course.	4.0	1.2	3.5
The course has increased my ability to read a mathematical text.	3.7	1.4	3.4
The course has increased my ability to communicate the subject in writing.	3.0	1.4	3.2
The course has increased my ability to communicate the subject orally.	3.1	1.2	2.6
The course has increased my ability to cooperate.	2.0	0.9	2.0
The course has increased my ability to search and process information.	3.4	1.2	2.9
The course has increased my ability to analyze and solve problems.	4.0	0.8	3.6
As a result of this course, I feel confident about tackling unfamiliar problems.	3.0	1.3	2.9

The above colours indicate how the mean values have changed from the reference point (blue = increase of at least 0.5, red = decrease of at least 0.5, yellow = smaller change). The fact that students report being less active than before is consistent with the estimated average work effort of 13.9 hours per week. The reference value is 19.4. This is taken as evidence for "covid-fatigue".

Students appear to report lower scores on statements regarding communication skills and similar. This is not surprising, since these elements of the course are less emphasized.

## Answer to free text questions

**Summary:** Since the material is not extensive, all submitted answers are reproduced below. Negative comments are mostly about the course literature.

No students report elements of discrimination.

### What did you appreciate most with the course?

Pedagogical approach to the subject and the lecturer pointing out what was important and what was hard to understand.

Really interesting topics as vector calculus, optimization and some topology.

I liked the style of the lectures. They were thorough without dragging too much I had a great lecturer.

Eskil is approachable, friendly and reasonable.

All teacher led activities were great. The schedule also allowed for a lot of uninterrupted study time which is valuable.

The lectures/lecture notes were very clear. It was great that everything, including the seminars, was uploaded.

The lectures and the content of the course.

### What do you think should be improved?

Mostly looking forward to lectures in person again.

I liked when Eskil summarized all the content of the course in one single presentation (pdf). I think this makes lectures easier and more enjoyable to follow than only handwriting.

The course literature was sometimes difficult to follow

Easier to read the lecture notes.

I think the by far most important improvement would be to replace the current course literature with course literature that contains clearly (precisely) stated theorems and rigorous proofs of those theorems. I was not able to learn mathematics from the current course literature.

Course literature, there were times when the teacher even disagreed with what was written. The notation varies a bit between the literature and the lectures which can get confusing at times.

Maybe 4 hours is a bit tough.

The course literature was not the best. The lecture notes were good but a bit hard to use later as they were uploaded as many different notes rather than say a pdf file with structured chapters. I would also have liked some group activities throughout the course which forces you to interact with the course material and other students. Homework similar to what we had in Analysis in one variable, Linear algebra 1 and Foundations of algebra would be nice.

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

No

No.

No

No

No

No

No

No