

## **Summary for Discrete Mathematics, Fall semester 2020 (MATB25, ÄMAD04)**

**Course responsible:** Arne Meurman

**Other teachers:** Anna Torstensson, Henrik Ekström

**Number of students:** 52

**Grade at first exam:** 7 V, 7 G, 11 U

### **Evaluation**

**Teachers comment:** The course appears to have worked out well for most of the students, given the circumstances. The Zoom streamed lectures, either on blackboard or when writing on paper were sometimes difficult to follow due to "blurriness", insufficient resolution. If distance teaching is done on a more permanent basis, better technical equipment is required.

The programming project should ideally be a bit more demanding, having some 3-4 different components that different students can work on and then combine by the group into the final upload.

Zoom surveillance of the written exam was felt to be uncomfortable by some students.

**Evaluation of changes since last time the course was given:** Some lectures on graph theory were added and construction of finite fields was removed, in accordance with the new general study plan. This appears to have worked well.

**Suggestion of changes until next time the course is given:** See the above comments on the programming project.

**Responsible and date for this summary:** Arne Meurman, February 22, 2021.

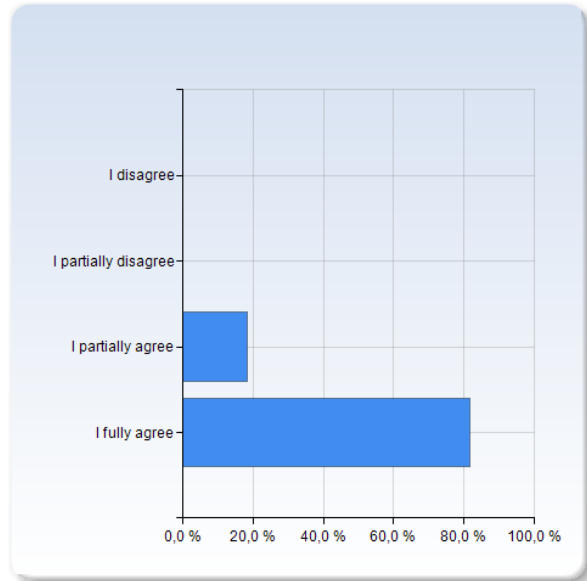
# DiscreteMathHT2020

Antal svar: 11

## The course in general

### The content of the course matched my expectations.

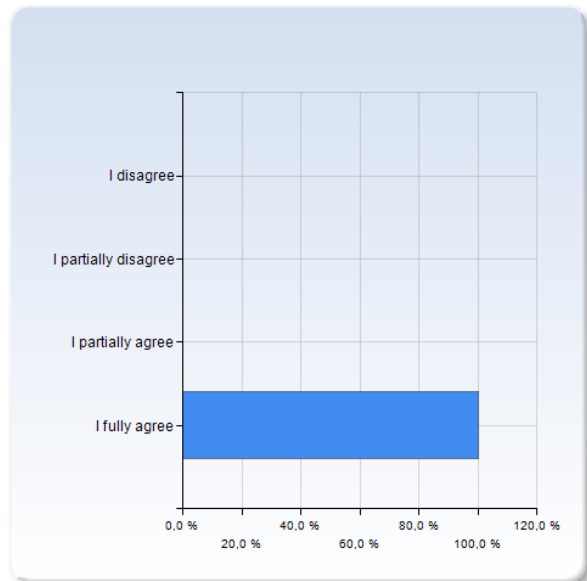
The content of the course matched my expectations.	Antal svar
I disagree	0 (0,0%)
I partially disagree	0 (0,0%)
I partially agree	2 (18,2%)
I fully agree	9 (81,8%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The content of the course matched my expectations.	3,8	0,4

### The information about the course (schedule, exam etc.) via Internet has been satisfactory.

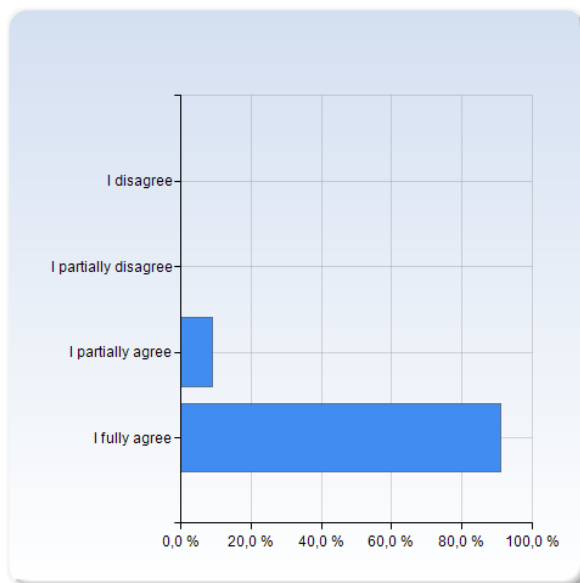
The information about the course (schedule, exam etc.) via Internet has been satisfactory.	Antal svar
I disagree	0 (0,0%)
I partially disagree	0 (0,0%)
I partially agree	0 (0,0%)
I fully agree	11 (100,0%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The information about the course (schedule, exam etc.) via Internet has been satisfactory.	4,0	0,0

### The information about the course (schedules, exam etc.) via lectures/and seminars has been satisfactory.

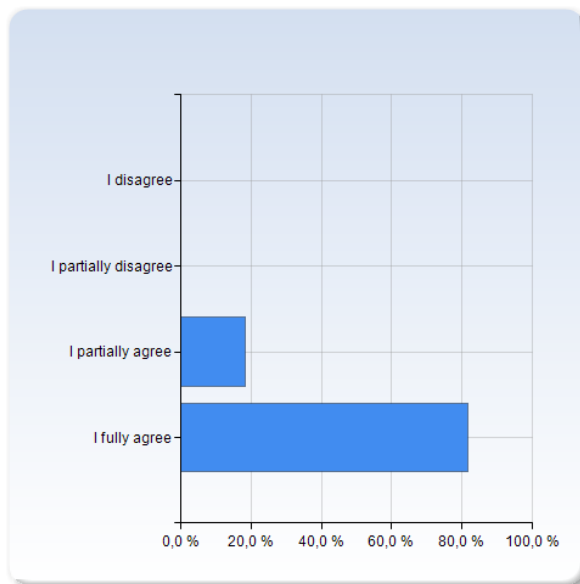
The information about the course (schedules, exam etc.) via lectures/and seminars has been satisfactory.	Antal svar
I disagree	0 (0,0%)
I partially disagree	0 (0,0%)
I partially agree	1 (9,1%)
I fully agree	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The information about the course (schedules, exam etc.) via lectures/and seminars has been satisfactory.	3,9	0,3

### The course was organized in a satisfactory manner.

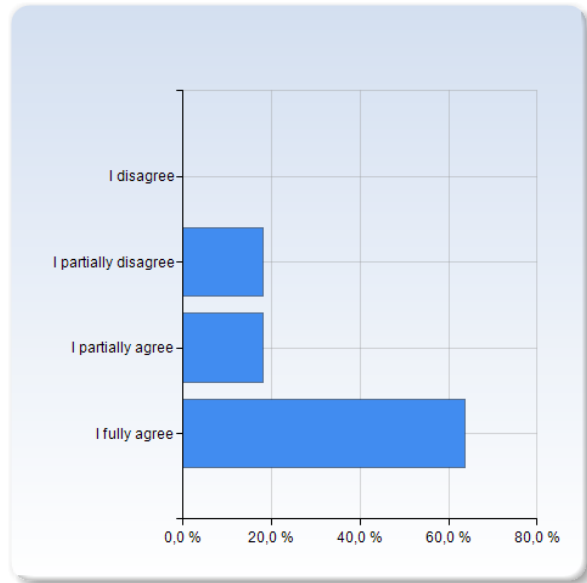
The course was organized in a satisfactory manner.	Antal svar
I disagree	0 (0,0%)
I partially disagree	0 (0,0%)
I partially agree	2 (18,2%)
I fully agree	9 (81,8%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The course was organized in a satisfactory manner.	3,8	0,4

### The course material has been comprehensible.

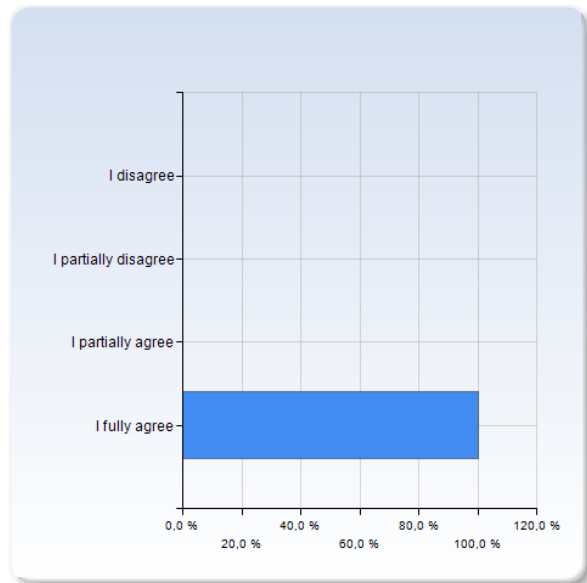
The course material has been comprehensible.	Antal svar
I disagree	0 (0,0%)
I partially disagree	2 (18,2%)
I partially agree	2 (18,2%)
I fully agree	7 (63,6%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The course material has been comprehensible.	3,5	0,8

### My prior knowledge has been sufficient in order to be able to assimilate the contents of the course.

My prior knowledge has been sufficient in order to be able to assimilate the contents of the course.	Antal svar
I disagree	0 (0,0%)
I partially disagree	0 (0,0%)
I partially agree	0 (0,0%)
I fully agree	11 (100,0%)
Summa	11 (100,0%)

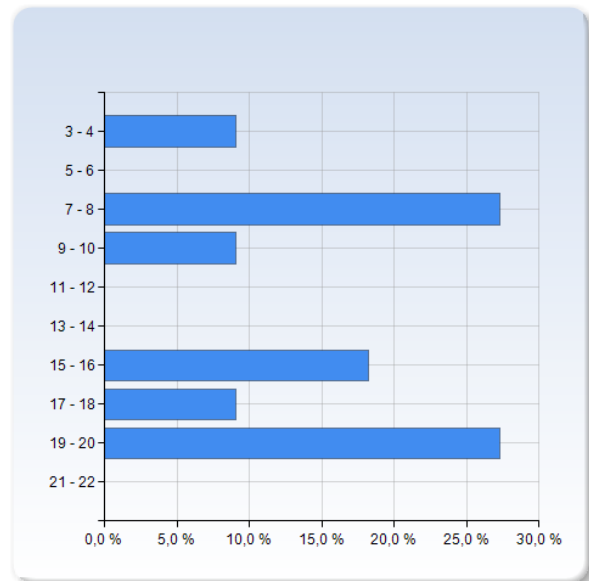


	Medelvärde	Standardavvikelse
My prior knowledge has been sufficient in order to be able to assimilate the contents of the course.	4,0	0,0

## How many hours per week have you spent on studying for this course, including scheduled hours?

### How many hours per week have you spent on studying for this course, including scheduled hours? - From

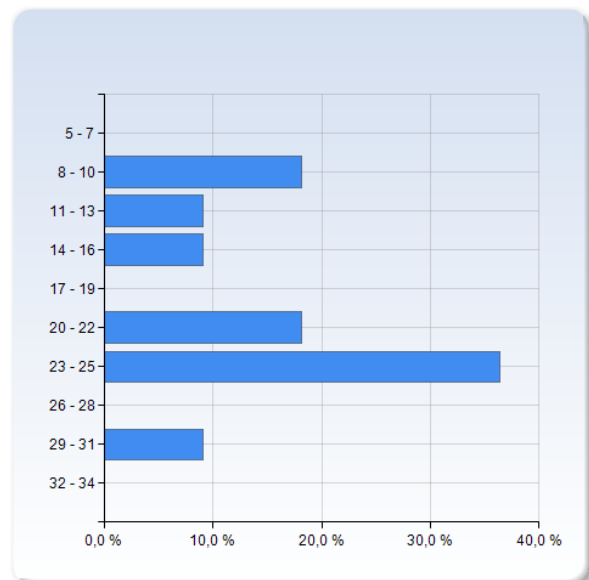
How many hours per week have you spent on studying for this course, including scheduled hours? - From	Antal svar
3 - 4	1 (9,1%)
5 - 6	0 (0,0%)
7 - 8	3 (27,3%)
9 - 10	1 (9,1%)
11 - 12	0 (0,0%)
13 - 14	0 (0,0%)
15 - 16	2 (18,2%)
17 - 18	1 (9,1%)
19 - 20	3 (27,3%)
21 - 22	0 (0,0%)
Summa	11 (100,0%)



How many hours per week have you spent on studying for this course, including scheduled hours? - From	Medelvärde	Standardavvikelse
	13,3	5,9

### How many hours per week have you spent on studying for this course, including scheduled hours? - To

How many hours per week have you spent on studying for this course, including scheduled hours? - To	Antal svar
5 - 7	0 (0,0%)
8 - 10	2 (18,2%)
11 - 13	1 (9,1%)
14 - 16	1 (9,1%)
17 - 19	0 (0,0%)
20 - 22	2 (18,2%)
23 - 25	4 (36,4%)
26 - 28	0 (0,0%)
29 - 31	1 (9,1%)
32 - 34	0 (0,0%)
Summa	11 (100,0%)

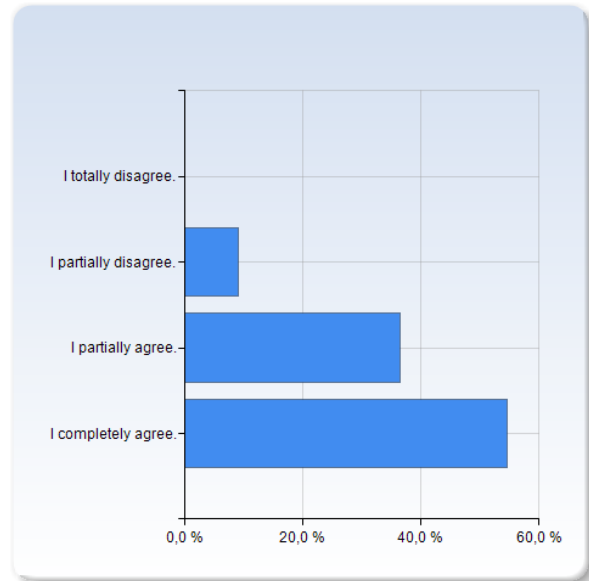


How many hours per week have you spent on studying for this course, including scheduled hours? - To	Medelvärde	Standardavvikelse
	19,5	7,3

## Course literature, course material

### The course literature has been informative and relevant.

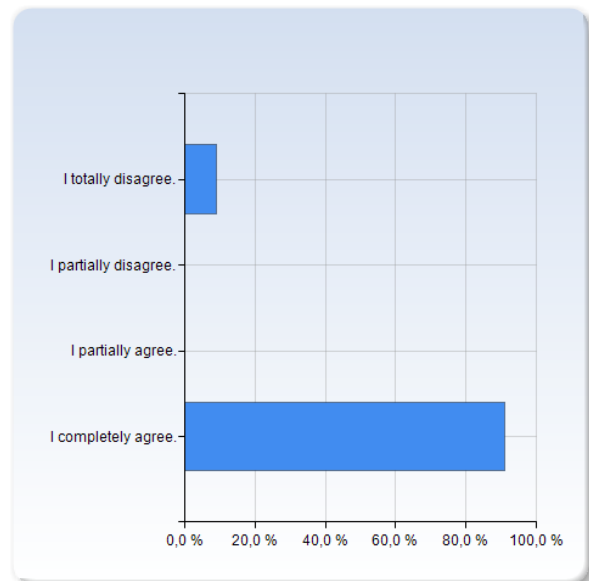
The course literature has been informative and relevant.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	4 (36,4%)
I completely agree.	6 (54,5%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The course literature has been informative and relevant.	3,5	0,7

### I have used the course literature and material extensively.

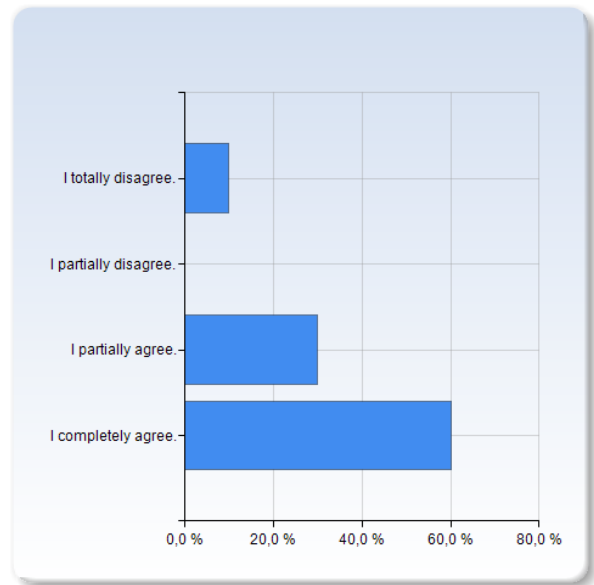
I have used the course literature and material extensively.	Antal svar
I totally disagree.	1 (9,1%)
I partially disagree.	0 (0,0%)
I partially agree.	0 (0,0%)
I completely agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
I have used the course literature and material extensively.	3,7	0,9

### The complementary course material has been satisfactory.

The complementary course material has been satisfactory.	Antal svar
I totally disagree.	1 (10,0%)
I partially disagree.	0 (0,0%)
I partially agree.	3 (30,0%)
I completely agree.	6 (60,0%)
Summa	10 (100,0%)

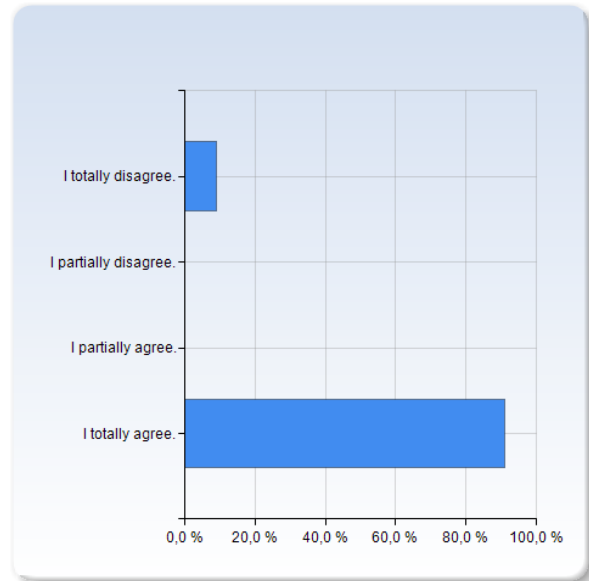


	Medelvärde	Standardavvikelse
The complementary course material has been satisfactory.	3,4	1,0

## The course website

### The course website was easy to reach and navigate.

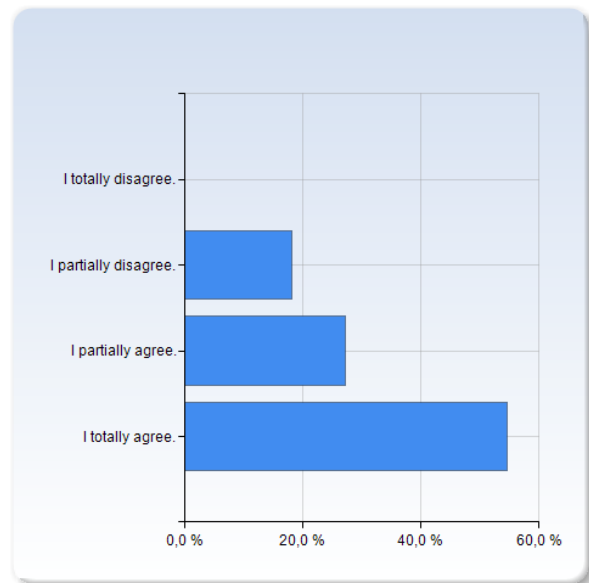
The course website was easy to reach and navigate.	Antal svar
I totally disagree.	1 (9,1%)
I partially disagree.	0 (0,0%)
I partially agree.	0 (0,0%)
I totally agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The course website was easy to reach and navigate.	3,7	0,9

### I have used the course website extensively during the course.

I have used the course website extensively during the course.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	2 (18,2%)
I partially agree.	3 (27,3%)
I totally agree.	6 (54,5%)
Summa	11 (100,0%)

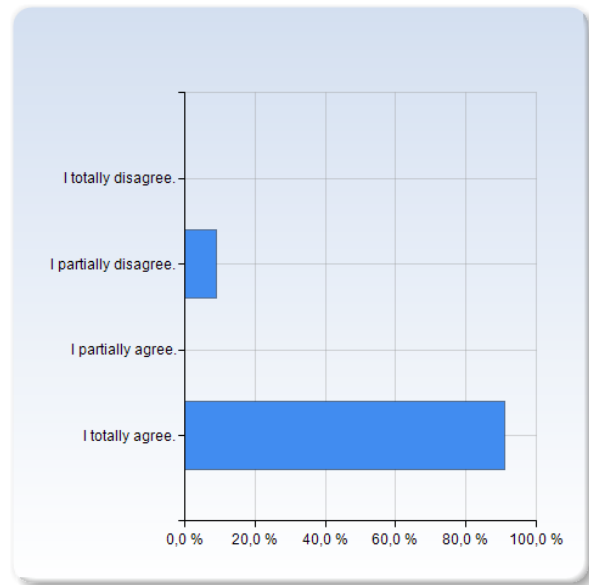


	Medelvärde	Standardavvikelse
I have used the course website extensively during the course.	3,4	0,8



### The information posted on the course website has been satisfactory.

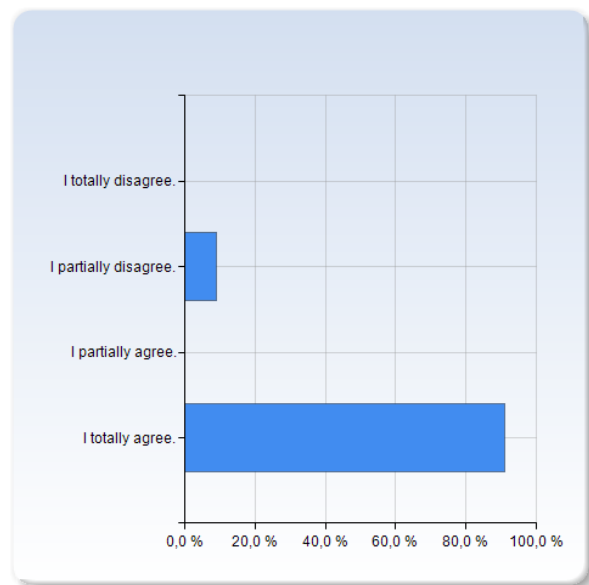
The information posted on the course website has been satisfactory.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	0 (0,0%)
I totally agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The information posted on the course website has been satisfactory.	3,8	0,6

### The material posted on the course website has been relevant.

The material posted on the course website has been relevant.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	0 (0,0%)
I totally agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The material posted on the course website has been relevant.	3,8	0,6

## Other comments about the course in general:

Other comments about the course in general:

I guess that question 4 is relevant for the course, although we have used canvas rather than a separate course website.

The course was great. Well organized, even due to the circumstances.

Great course overall with especially competent teaching assistant(s).

It's been the best organised course I've been at so far!

I thought the course was very well organized which makes it so much easier to study the course.

The written examination format has been really stressful, due to the pandemic. Having a compulsory zoom meeting and everything timed was a nightmare and impacted my assessment, mainly due to concerns regarding my internet connection and possible computer crashes, which would have given me a Fail. Hopefully next year it won't be the same for new students; but I still wanted to notice you about this odd practice.

## What did you like the most about the course?

What did you like the most about the course?

The introduction to fields and error-correcting codes

The course material was good. The exams felt like they mirrored the content of the course

The algebra and graph theory sections.

Seminars (by Henrik) were very well structured, we always managed to solve all interesting problems and his solutions were always understandable. Also literature was well-matched to the course contents and therefore it was easy to follow the lectures.

I thought Arne was a very good lecturer, although the quality on zoom wasn't the best so sometimes it was hard to see what he wrote. But he always answered questions in a good and pedagogical way. The seminar teacher Henrik was also very good, he was good at explaining the content and answering questions. The way he held the seminars by writing directly on an iPad and sharing that screen is in my opinion the best way to do it.

The lecturer was very precise and pedagogical.

All the pre-recorded lectures were very useful.

Graph theory.

## What features of the course need improvement?

What features of the course need improvement?

In Andersson: Need more in depth examples and explanations for finite fields and the error correction part was a bit messy, specifically chapter 3.

Grimaldi's book is not the most elegant. However, I may admit I have no idea of other books to choose.

In my opinion, the programming hand in for NF students was a bit too simple and didn't contribute much to learning or understanding of the course content. If such a hand in should be done in groups of 3-4, it should be a bit more difficult, and if it is on the same level as this time, the groups should be smaller (maximum 2 people).

The lectures were kind of similar to the course material, with the same examples. Perhaps one could do a bit more involved discussions on lectures?

There was too much focus on error correction/encryption in my opinion. Although it's an interesting topic, and definitely deserves a chapter or two, but not half a course.

I think it would be nice to have more exams to exercise, since the course was reformed, the exam was quite a surprise in comparison to previous years.

I think some of the exercises could be changed to be more motivational and to show more where the knowledge is used in real life. For example the exercises where you should determine in how many ways 20 cookies can be distributed among children, surely combinatorics are not used only to calculate these kinds of questions but to calculate some more interesting and useful problems.

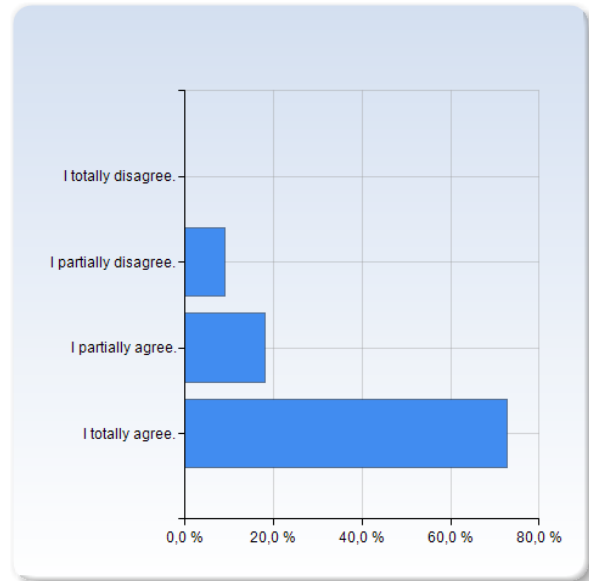
The book is too messy to read. Everything is an example...

We should really have more time between the lectures and the seminars. Having the seminar the afternoon after a lecture was not really compatible with my timetable, and I had to skip a lot of exercises / look at them after the seminars, which became pointless for me then.

## Lectures

### The planning of the lectures has been satisfactory.

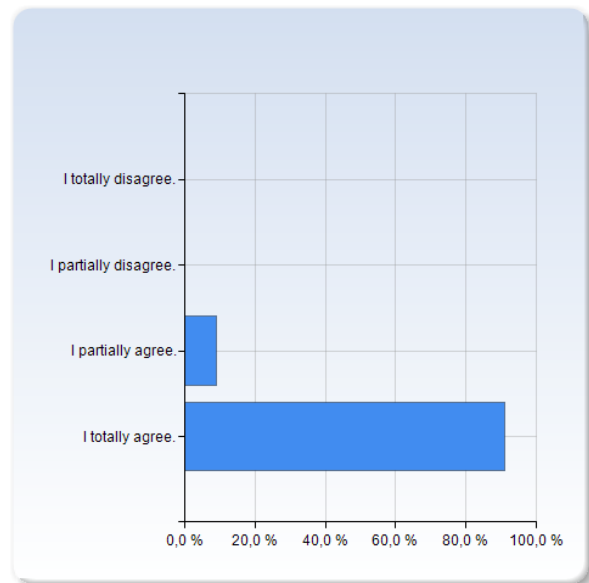
The planning of the lectures has been satisfactory.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	2 (18,2%)
I totally agree.	8 (72,7%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The planning of the lectures has been satisfactory.	3,6	0,7

### The number of lectures has been satisfactory.

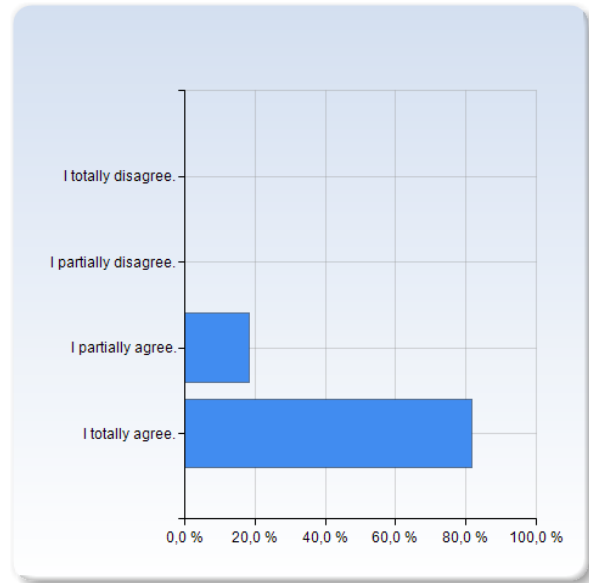
The number of lectures has been satisfactory.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	0 (0,0%)
I partially agree.	1 (9,1%)
I totally agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The number of lectures has been satisfactory.	3,9	0,3

### The pace of the lectures matched the content of the course.

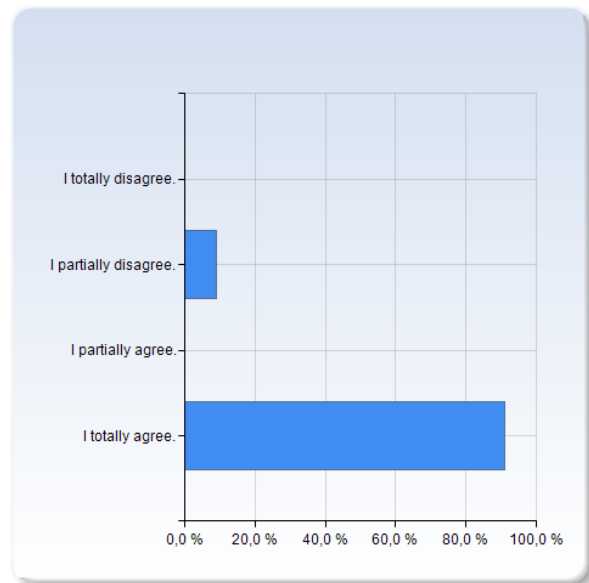
The pace of the lectures matched the content of the course.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	0 (0,0%)
I partially agree.	2 (18,2%)
I totally agree.	9 (81,8%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The pace of the lectures matched the content of the course.	3,8	0,4

### The lecturer presented the material in a pedagogical manner.

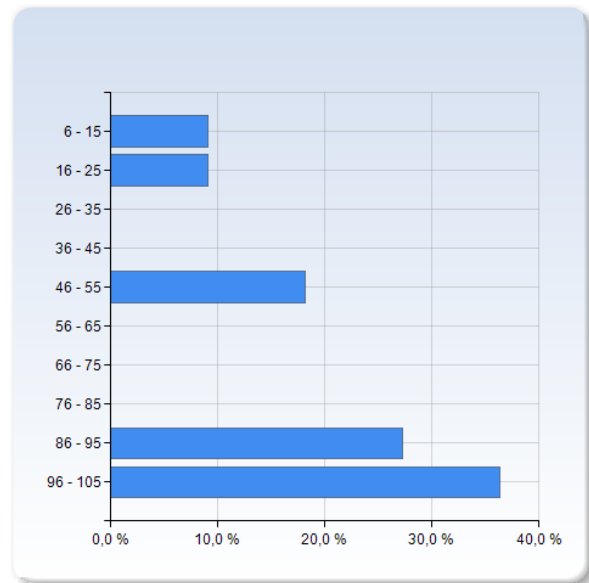
The lecturer presented the material in a pedagogical manner.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	0 (0,0%)
I totally agree.	10 (90,9%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The lecturer presented the material in a pedagogical manner.	3,8	0,6

## To which extent did you attend the lectures? (percentage)

To which extent did you attend the lectures? (percentage)	Antal svar
6 - 15	1 (9,1%)
16 - 25	1 (9,1%)
26 - 35	0 (0,0%)
36 - 45	0 (0,0%)
46 - 55	2 (18,2%)
56 - 65	0 (0,0%)
66 - 75	0 (0,0%)
76 - 85	0 (0,0%)
86 - 95	3 (27,3%)
96 - 105	4 (36,4%)
	11
Summa	(100,0%)



To which extent did you attend the lectures? (percentage)	Medelvärde	Standardavvikelse
	73,8	34,7

## Other comments regarding the lectures:

Other comments regarding the lectures:

Similar to the course material.

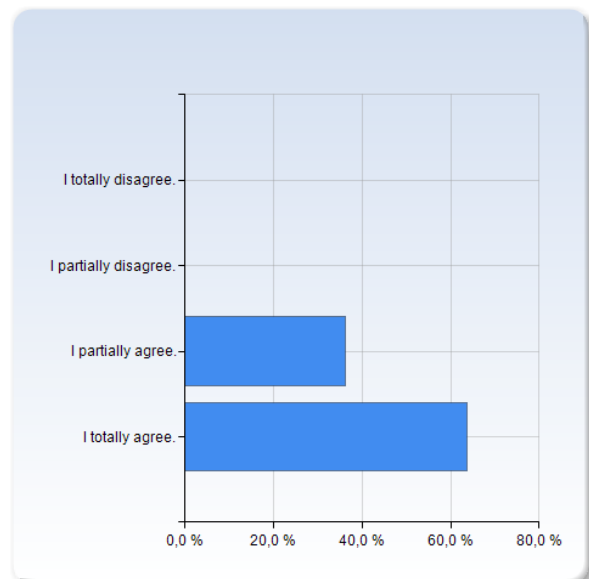
Arne is a great lecturer!

The internet connection at the math-building (or something along those lines) at 1 o'clock was not good enough, rendering the lectures close to unwatchable because of the poor quality.

## Seminars

### The number of seminars has been satisfactory.

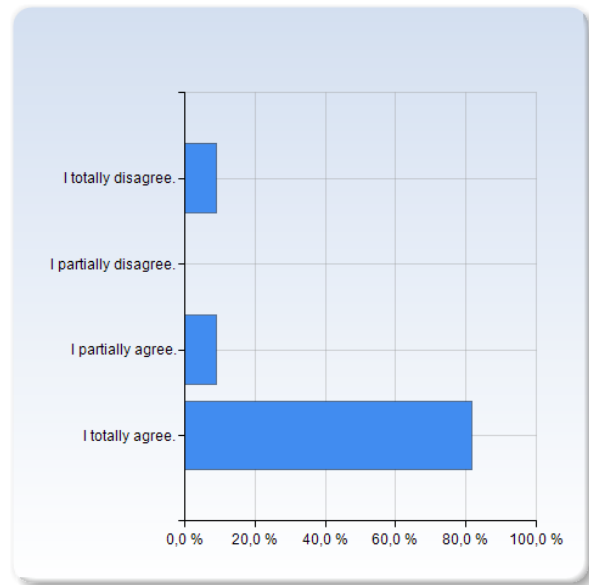
The number of seminars has been satisfactory.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	0 (0,0%)
I partially agree.	4 (36,4%)
I totally agree.	7 (63,6%)
Summa	11 (100,0%)



The number of seminars has been satisfactory.	Medelvärde	Standardavvikelse
	3,6	0,5

### The teaching form and planning of the seminars has been satisfactory.

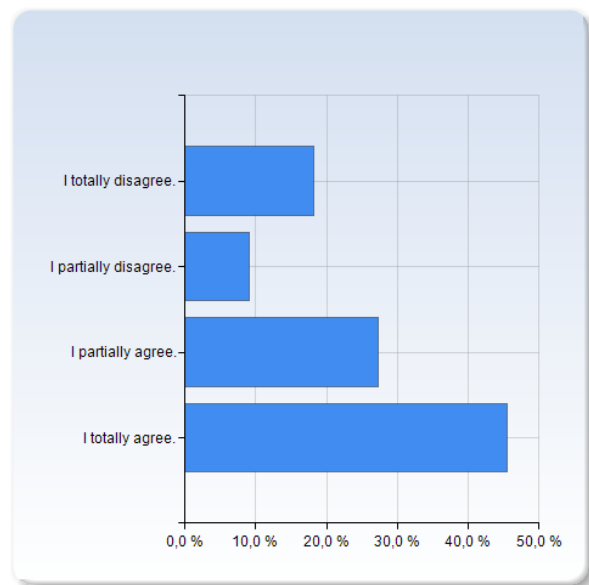
The teaching form and planning of the seminars has been satisfactory.	Antal svar
I totally disagree.	1 (9,1%)
I partially disagree.	0 (0,0%)
I partially agree.	1 (9,1%)
I totally agree.	9 (81,8%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The teaching form and planning of the seminars has been satisfactory.	3,6	0,9

### The seminars contributed to increase my understanding of the subject.

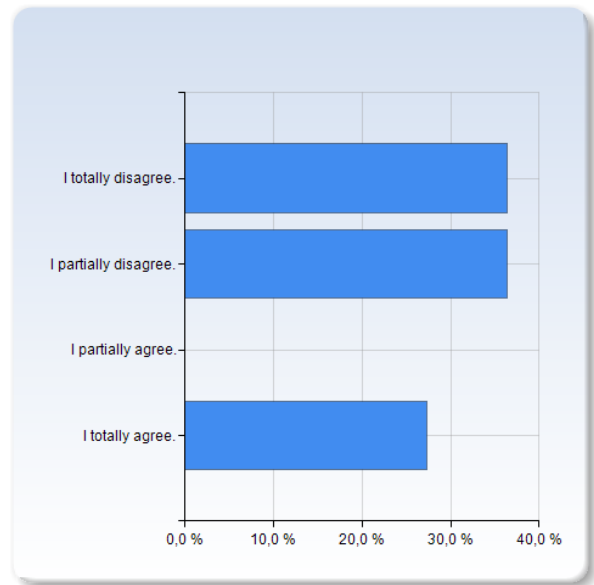
The seminars contributed to increase my understanding of the subject.	Antal svar
I totally disagree.	2 (18,2%)
I partially disagree.	1 (9,1%)
I partially agree.	3 (27,3%)
I totally agree.	5 (45,5%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The seminars contributed to increase my understanding of the subject.	3,0	1,2

### I have actively participated in the seminars.

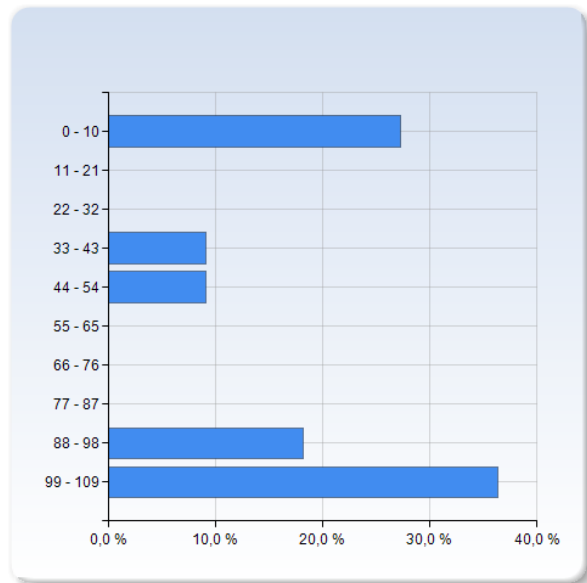
I have actively participated in the seminars.	Antal svar
I totally disagree.	4 (36,4%)
I partially disagree.	4 (36,4%)
I partially agree.	0 (0,0%)
I totally agree.	3 (27,3%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
I have actively participated in the seminars.	2,2	1,3

## To which extent did you attend the seminars? (percentage)

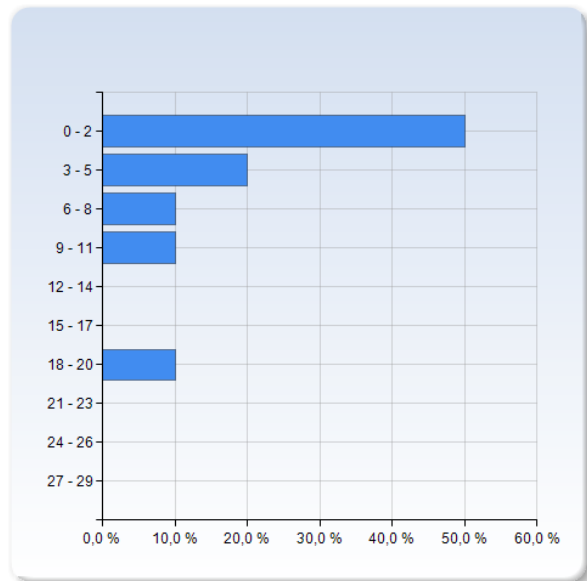
To which extent did you attend the seminars? (percentage)	Antal svar
0 - 10	3 (27,3%)
11 - 21	0 (0,0%)
22 - 32	0 (0,0%)
33 - 43	1 (9,1%)
44 - 54	1 (9,1%)
55 - 65	0 (0,0%)
66 - 76	0 (0,0%)
77 - 87	0 (0,0%)
88 - 98	2 (18,2%)
99 - 109	4 (36,4%)
Summa	11 (100,0%)



To which extent did you attend the seminars? (percentage)	Medelvärde	Standardavvikelse
	61,8	43,8

## How many hours did you spend to prepare for the seminars?

How many hours did you spend to prepare for the seminars?	Antal svar
0 - 2	5 (50,0%)
3 - 5	2 (20,0%)
6 - 8	1 (10,0%)
9 - 11	1 (10,0%)
12 - 14	0 (0,0%)
15 - 17	0 (0,0%)
18 - 20	1 (10,0%)
21 - 23	0 (0,0%)
24 - 26	0 (0,0%)
27 - 29	0 (0,0%)
Summa	10 (100,0%)



How many hours did you spend to prepare for the seminars?	Medelvärde	Standardavvikelse
	4,7	6,3

## Other comments regarding the seminars.

Other comments regarding the seminars.

The format of using a virtual whiteboard worked very well, and the TA was very pedagogical. Great over all.

They were really good!

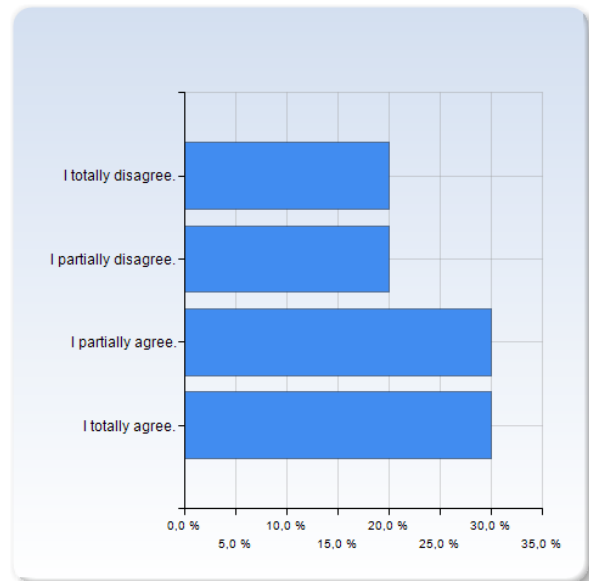
See my main concern about the time between lectures and seminars.



## Projects, assignments

### The degree of difficulty of the assignments matched the content of the course.

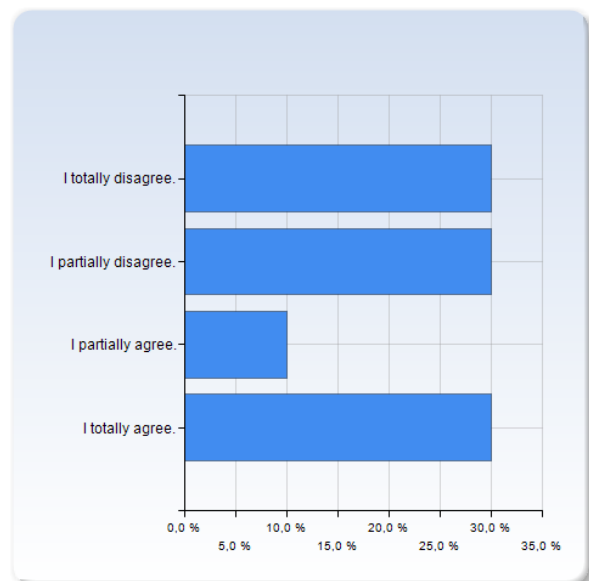
The degree of difficulty of the assignments matched the content of the course.	Antal svar
I totally disagree.	2 (20,0%)
I partially disagree.	2 (20,0%)
I partially agree.	3 (30,0%)
I totally agree.	3 (30,0%)
Summa	10 (100,0%)



	Medelvärde	Standardavvikelse
The degree of difficulty of the assignments matched the content of the course.	2,7	1,2

### The assignments contributed to increase my understanding of the subject.

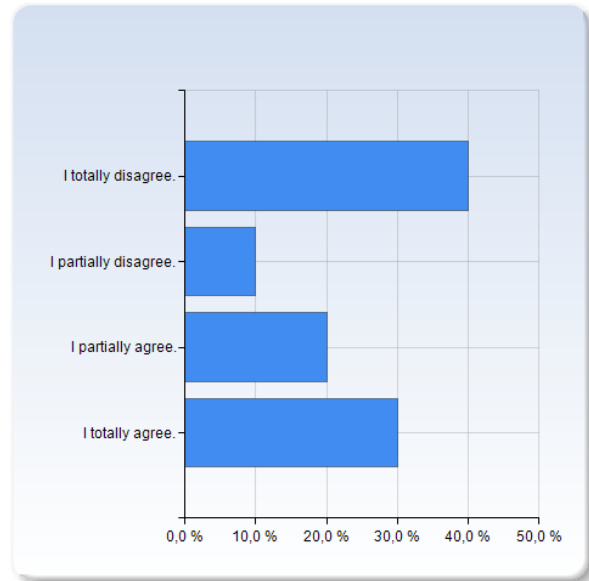
The assignments contributed to increase my understanding of the subject.	Antal svar
I totally disagree.	3 (30,0%)
I partially disagree.	3 (30,0%)
I partially agree.	1 (10,0%)
I totally agree.	3 (30,0%)
Summa	10 (100,0%)



	Medelvärde	Standardavvikelse
The assignments contributed to increase my understanding of the subject.	2,4	1,3

### The assignments contributed to increase my ability to communicate my mathematical knowledge.

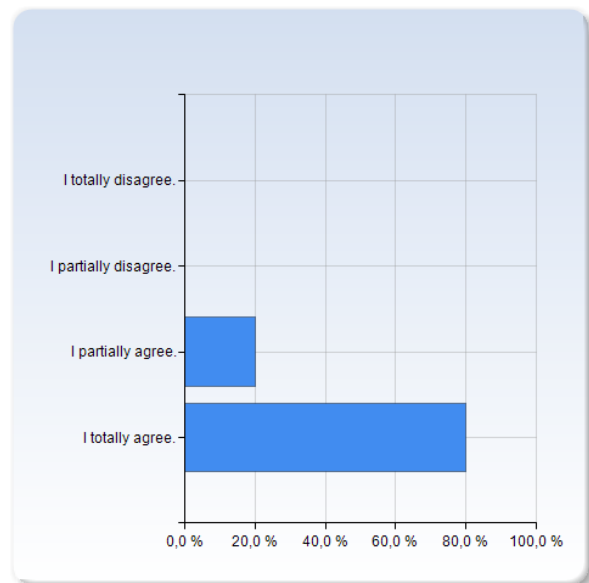
The assignments contributed to increase my ability to communicate my mathematical knowledge.	Antal svar
	4
I totally disagree.	(40,0%)
I partially disagree.	1 (10,0%)
I partially agree.	2 (20,0%)
I totally agree.	3 (30,0%)
Summa	10 (100,0%)



	Medelvärde	Standardavvikelse
The assignments contributed to increase my ability to communicate my mathematical knowledge.	2,4	1,3

### The planning and implementation of the assignments has been satisfactory.

The planning and implementation of the assignments has been satisfactory.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	0 (0,0%)
I partially agree.	2 (20,0%)
I totally agree.	8 (80,0%)
Summa	10 (100,0%)



	Medelvärde	Standardavvikelse
The planning and implementation of the assignments has been satisfactory.	3,8	0,4

## Other comments about the assignments:

Other comments about the assignments:

Too simple for a group of 4 people.

The programming assignment was extremely easy in my opinion. That's not necessarily an issue, but given that it's a group project it would be better if it contained more separate tasks and/or was possible to divide into sub-problems. As it were it was really hard to divide the labor among the group in any way.

I didn't learn that much from the assignment unfortunately.

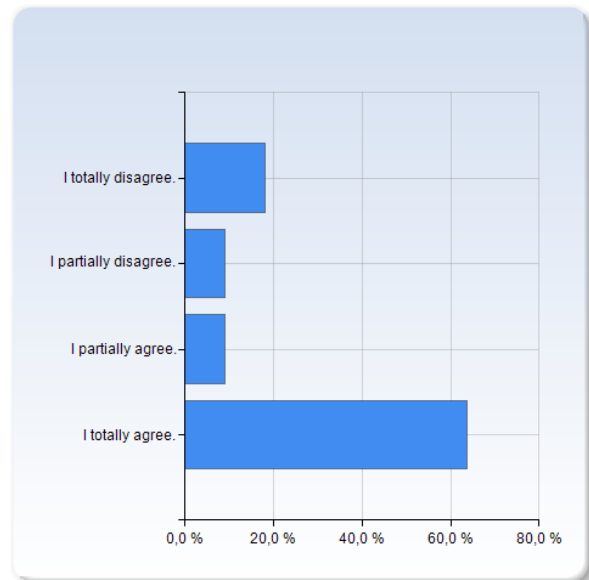
The programming exercise might just have been the most trivial thing I've done in my entire life.

Nice assignment, but it is hard to understand exactly what was expected (ie. the programming language, or the form of the algorithm output), for people who have not done programming before.

## Examination

### The examination form has been satisfactory.

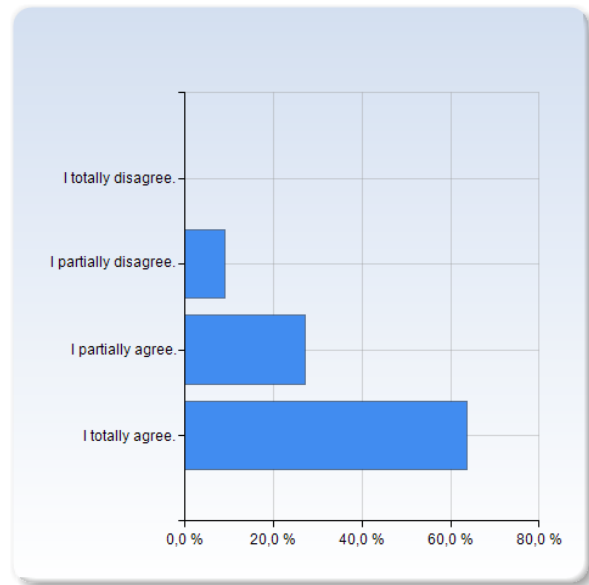
The examination form has been satisfactory.	Antal svar
I totally disagree.	2 (18,2%)
I partially disagree.	1 (9,1%)
I partially agree.	1 (9,1%)
I totally agree.	7 (63,6%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The examination form has been satisfactory.	3,2	1,3

### The degree of difficulty of the examination matched the content of the course.

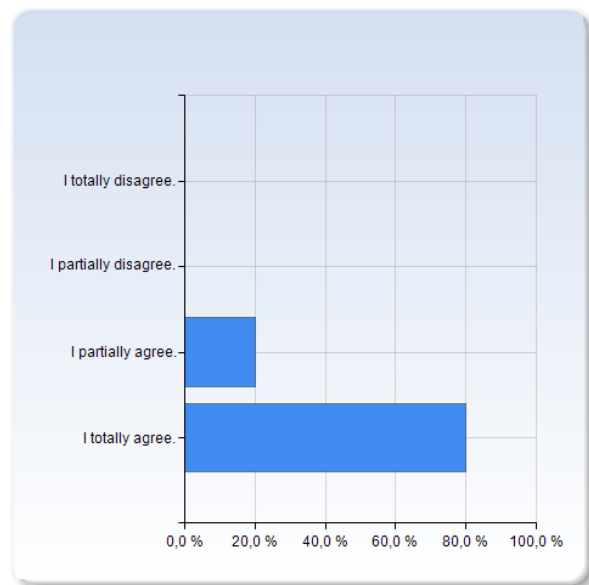
The degree of difficulty of the examination matched the content of the course.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	1 (9,1%)
I partially agree.	3 (27,3%)
I totally agree.	7 (63,6%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The degree of difficulty of the examination matched the content of the course.	3,5	0,7

### The exam questions reflected the content of the course and matched the learning objectives.

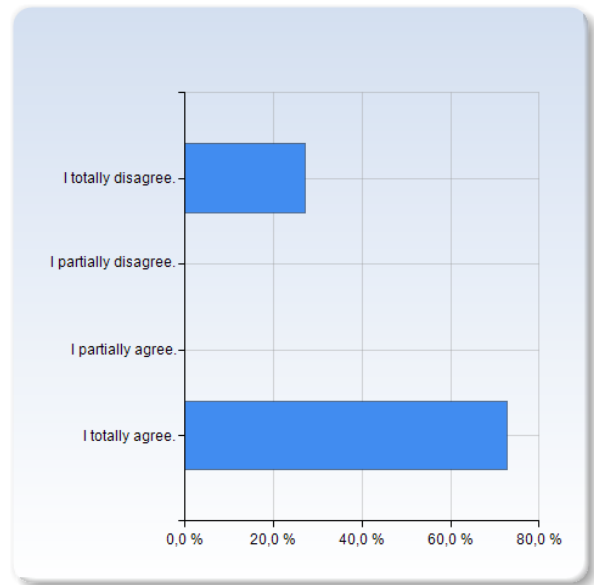
The exam questions reflected the content of the course and matched the learning objectives.	Antal svar
I totally disagree.	0 (0,0%)
I partially disagree.	0 (0,0%)
I partially agree.	2 (20,0%)
I totally agree.	8 (80,0%)
Summa	10 (100,0%)



	Medelvärde	Standardavvikelse
The exam questions reflected the content of the course and matched the learning objectives.	3,8	0,4

### The grade that I received on the exam reflects my work during the course.

The grade that I received on the exam reflects my work during the course.	Antal svar
I totally disagree.	3 (27,3%)
I partially disagree.	0 (0,0%)
I partially agree.	0 (0,0%)
I totally agree.	8 (72,7%)
Summa	11 (100,0%)



	Medelvärde	Standardavvikelse
The grade that I received on the exam reflects my work during the course.	3,2	1,4

## Other comments regarding the examination:

Other comments regarding the examination:

surveilling one's home is uncomfortable. Hopefully this will not be pushed as standard once the pandemic is over.

The online examination wasn't perfect. There should have been more moderation to ensure no participants e.g. accidentally un-muted themselves while having music on for too long.

Like I said before, at least one mock exam on Canvas would be nice to prepare.

The examination form has been satisfactory since it was via zoom and not a take-home exam, I much prefer a zoom exam. Unfortunately I thought the exam was very hard, much harder than the previous years which I find strange. I studied A LOT for the exam, and I didn't do at all as well as I expected and hoped for, the exam really was harder than I thought it would be and I was not prepared for that level of difficulty.

This examination format is nothing less of a joke. It's solves absolutely nothing but too increase the amount of stress before (to arrange the proper setup, for which it is not guaranteed that everyone has access to) and during the examination (concentrated noise and stressing about a stable Internet connection, people not walking in etc.). It is already hard to focus in a normal examination situation (and is in out of itself an absolute disastrous way of measuring someone's knowledge), but this format is - not so surprisingly - even worse. Clearly the person who had this genius idea also had no clue. It doesn't even solve "cheating" problems. It is beyond my understanding how universities/departments still choose to follow suit.

Why not give a challenging home exam? Give extra project work that is again more challenging and contributes to one's understanding of the subject? The n hour exam format is already outdated and yet when there is a possibility to improve on it and create an infrastructure that may last after this terrible pandemic, the task is given to imbeciles. It's a shame.

See my main comment on the online examination format.

## What is your opinion about this course evaluation form?

What is your opinion about this course evaluation form?

ok

Perhaps one could add fifth level in the middle.

Some questions were a bit hard to understand, like "13. How many hours did you spend to prepare for the seminars?".

In total during the whole course, per seminar, per week?

Otherwise, it was good.

There was no question about the current situation, i.e. the online study pace. On the lectures the connection was very often unstable, and following the content was very hard - even though it didn't happen on any other course from maths faculty.

Good.

Good, covers all aspects.