Course Analysis for NUMN32 Numerical Methods for Differential Equations, Autumn 2022

Course Information

Lecturer: Tony Stillfjord, Monika Eisenmann
Teaching assistants: Monika Eisenmann, Måns Williamson, Niklas Kotarsky, Jaime Manriquez, Emil Engström (partial substitute)
Number of students:
10 newly registered and 0 re-registered.
2 students answered the course evaluation survey, 1 of them from the Bachelor's and 1 from the Master's programme in Mathematics.

Examination

Project: 9 students passed.
Written examination: 8 students passed.

- – Ordinary examination 04/01 2023: 8 students participated and 8 of them passed.

Final grades
In all, 8 students, have got their final grade.
6 passed with distinction.
2 passed.

Course Evaluation

Summary of student's answers:
The course is a shared course between NF and LTH where the majority of students come from LTH. Separate course evaluation are done for the LTH and NF students. The NF version was sent out on Feb. 15 and was open for seven days. Only two out of the 10 NF students answered the survey, and the LTH evaluation had not yet been discussed at the time of this writing. Thus, it is difficult to draw any conclusions from the results. Out of the two NF responses, one student was very content in general while the other one was more neutral. Neither of the two students expressed negative feelings about anything.

Teachers' comments: The course contains three lectures a week plus an extra lecture in the first week where the course content and some organizational aspects are explained. All teaching took place on campus with the exception of a single Zoom lecture due to a cold. Like last year, there were two lecturers and the lectures were split evenly among us by topic.

A major change from last year is that we switched from using Beamer slides to primarily using the blackboard. The handwritten lecture notes were provided to the students. The students seem to appreciate the blackboard more than

slides, but it also means that we cannot cover all the material that we previously did.

The course contains three mandatory computer projects. In the projects, the students have to implement the introduced methods, apply them to simple problems and interpret the results. We provide a Matlab repetition in the first week and one to two exercise sessions every week where the students can ask the teaching assistants for help with their code.

These projects are then presented to a teaching assistant who provides some feedback and a pass/fail grade. In the case of a fail, they get the opportunity to update their project and hand in a revised version. This year, like most years, many students passed every project at the first opportunity and almost everyone had passed all the projects at the end of the course.

We also note that the exercise classes were full close to a project deadline and more quiet at other times, even though it was reiterated often that the students should start programming as early as possible.

For the more theoretical part of the course, we provide a sheet with study questions every week. Quite a few of these are discussed implicitly during the lectures, but the students are encouraged to work out their own solutions. If they need help, they can ask for feedback in the exercise sessions but there are also hints and partial solutions published on the course webpage.

8 students attended the exam, all of them passed and 6 of them passed with distinction. We are quite happy with this result.

Changes from the previous course realization:

In previous years, we have received negative feedback about Beamer-based lectures slides. Thus, we converted the lectures to the blackboard. Our impression is that this was perceived positively by the students. In contrast to other years, we did not receive any negative feedback about the form of the lecture at the (LTH) midterm CEQ review. The students also seemed to look at the provided handwritten lecture notes when doing the exercises.

Moreover, we provided further written hints and partial solutions for the non-mandatory study questions. These were now also published in a different way that made it easier to find them on the canvas page. They seemed to help, but we received feedback during the semester that some students would appreciate more support. However, the students expressing these concerns never provided any concrete questions on topics they found difficult when offered help by the lecturers.

In the midterm review, the LTH students expressed the wish to have more opportunities to ask questions about the projects and exercises. In particular, they wanted the exercise sessions to be easier integrable in their schedules. We changed from having two 2-hour exercise sessions to four 1-hour exercise sessions. Overall it seemed that the number of students to attend the sessions stayed roughly the same. So far, it is hard to judge if the change was helpful to the students.

Suggestions for the next course realisation:

Due to frequent requests from the LTH students, some of whom are not even attempting the study questions due to a lack of solutions, we are considering publishing more explicit solutions next year. However, we think this might have also negative side effects on the students learning process.

We are also considering reorganizing the material so as to not use the logarithmic norm but more standard concepts.

NUMN32 ht2022

Answer Count: 2

I have studied this course as part of

I have studied this course as part of	Number of responses
Bachelor´s Programme in Mathematics	1 (50,0%)
Bachelor´s Programme in Physics, Theoretical Physics, Astronomy	0 (0,0%)
Bachelor´s Programme, other specialization	0 (0,0%)
Master's Programme in Mathematics	1 (50,0%)
Master´s Programme in Mathematical Statistics	0 (0,0%)
Master´s Programme, other specialization	0 (0,0%)
Other programme or as stand alone course	0 (0,0%)
Total	2 (100,0%)
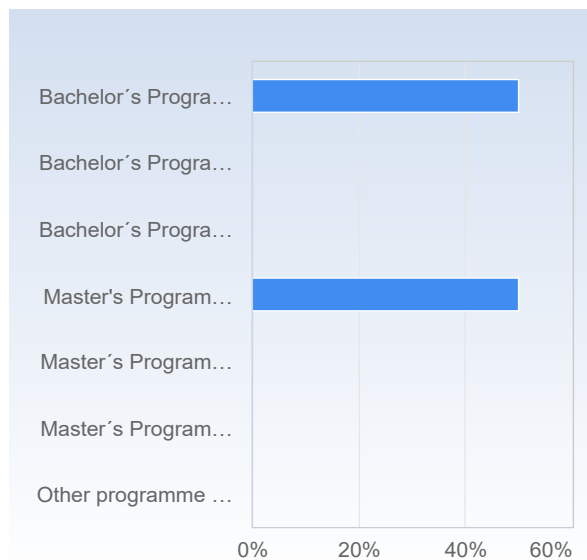
	Mean	Standard Deviation
I have studied this course as part of	2,5	2,1

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

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

My prior knowledge has been sufficient to assimilate the contents of this course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
My prior knowledge has been sufficient to assimilate the contents of this course.	4,0	1,4

I have participated actively in the course.

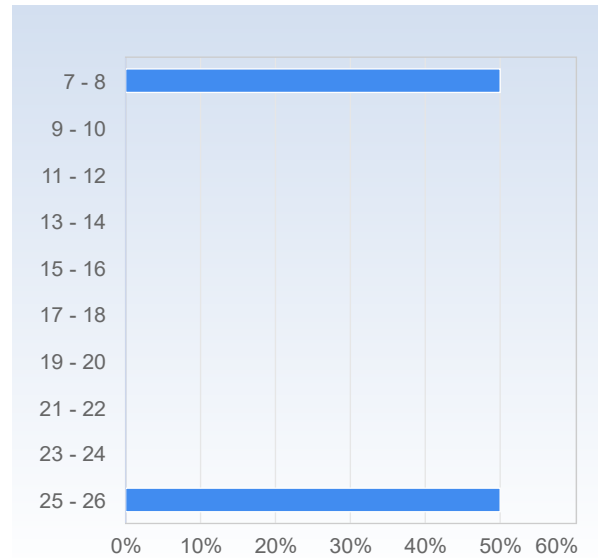| I have participated actively in the course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
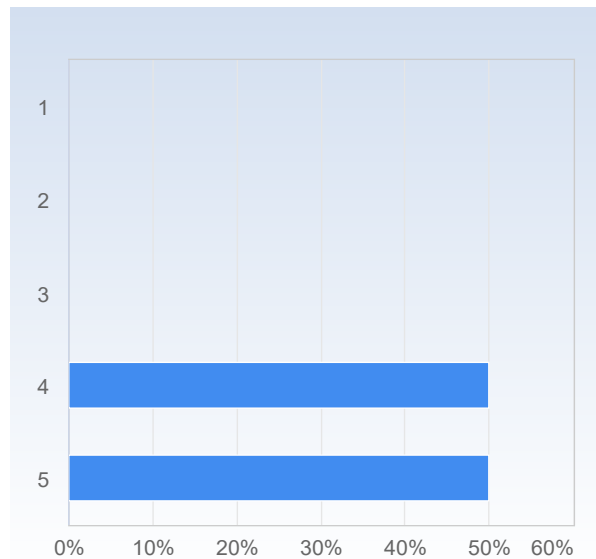
	Mean	Standard Deviation
I have participated actively in the course.	4,5	0,7

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
7 - 8	1 (50,0%)
9 - 10	0 (0,0%)
11 - 12	0 (0,0%)
13 - 14	0 (0,0%)
15 - 16	0 (0,0%)
17 - 18	0 (0,0%)
19 - 20	0 (0,0%)
21 - 22	0 (0,0%)
23 - 24	0 (0,0%)
25 - 26	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
Average number of hours spent in total on the course per week (including scheduled activities):	16,5	12,0

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
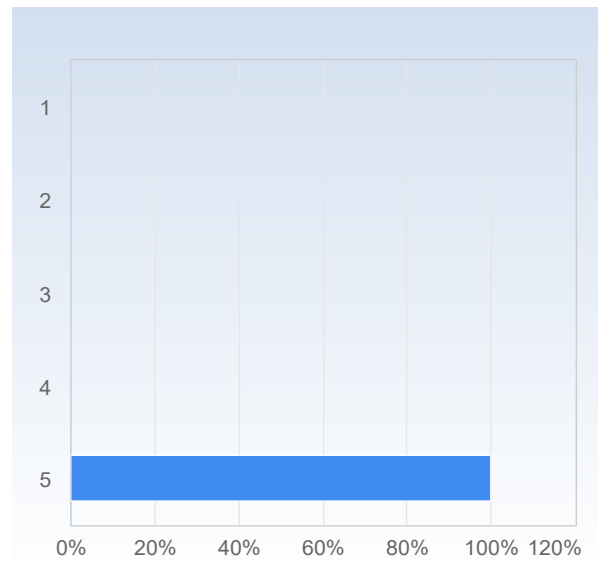
The way the course was taught and organised suited me.

The way the course was taught and organised suited me.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
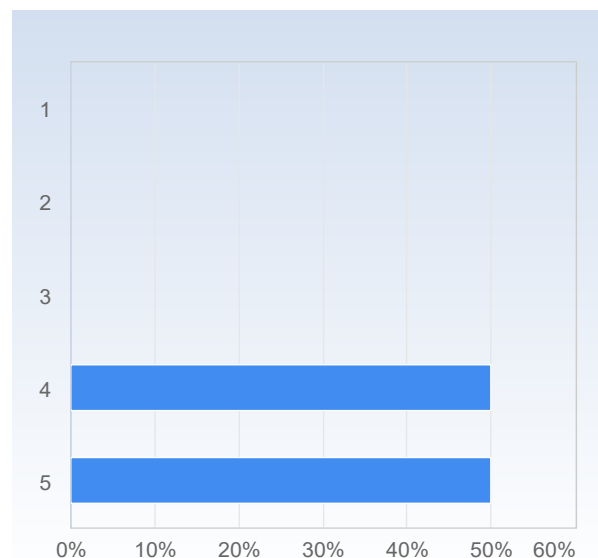
	Mean	Standard Deviation
The way the course was taught and organised suited me.	4,5	0,7

## The number of teacher lead activities (lectures, computer exercises etc.) has been satisfactory.

The number of teacher lead activities (lectures, computer exercises etc.) has been satisfactory.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	0 (0,0%)
5	2 (100,0%)
Total	2 (100,0%)

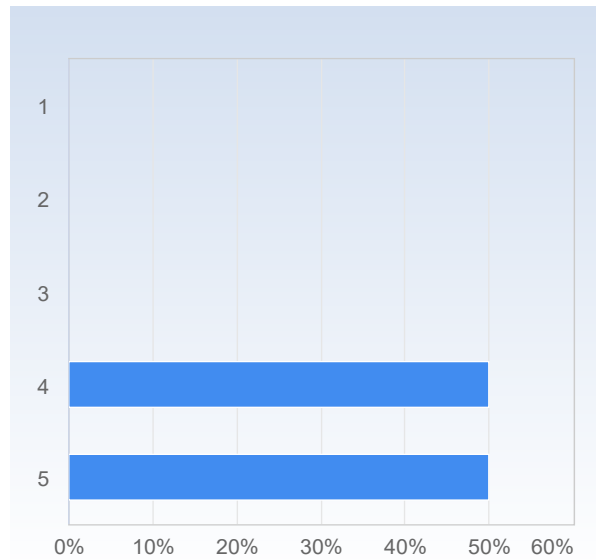|	Mean	Standard Deviation
The number of teacher lead activities (lectures, computer exercises etc.) has been satisfactory.	5,0	0,0

The lectures were valuable for my learning.

The lectures were valuable for my learning.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)
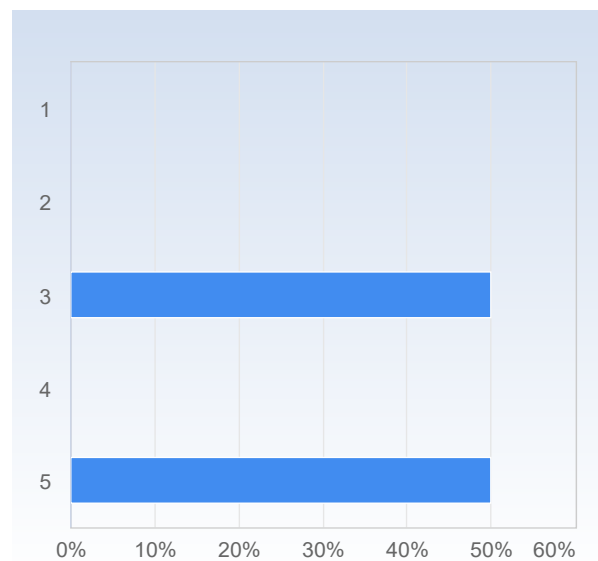
	Mean	Standard Deviation
The lectures were valuable for my learning.	4,0	1,4

The computer exercises were valuable for my learning.

The computer exercises were valuable for my learning.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The computer exercises were valuable for my learning.	4,5	0,7

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	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
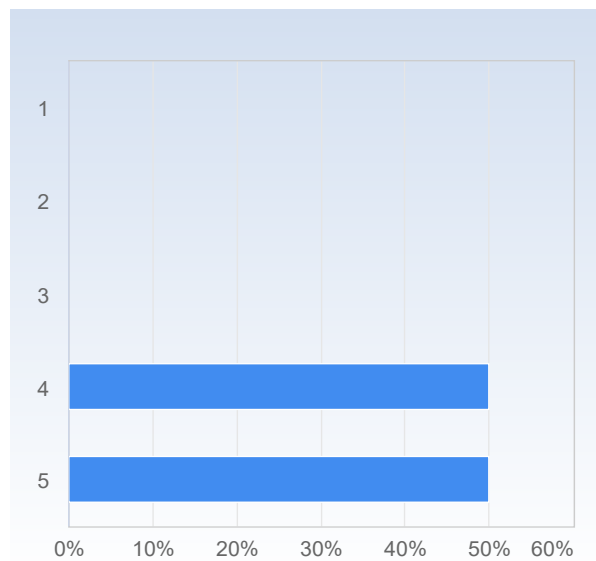
	Mean	Standard Deviation
Studying on my own was valuable for my learning.	4,5	0,7

The course literature/material was a valuable learning resource.

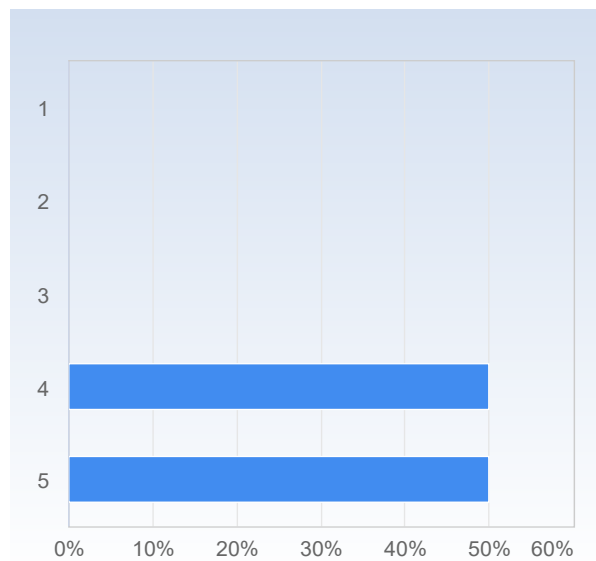| The course literature/material was a valuable learning resource.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)
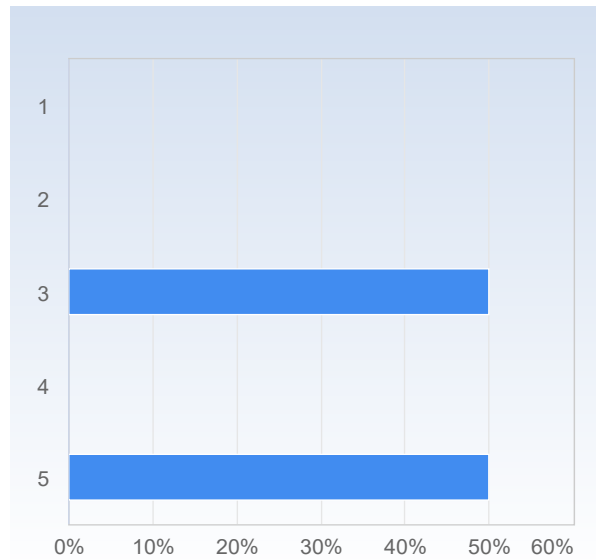
	Mean	Standard Deviation
The course literature/material was a valuable learning resource.	4,0	1,4

The information I received before the course start was satisfactory.

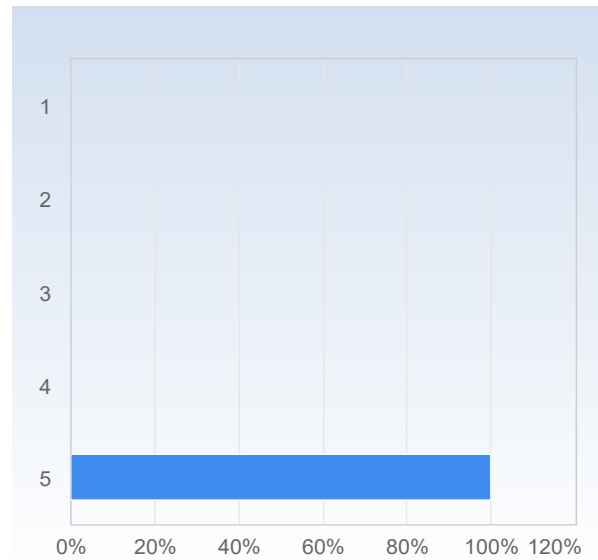| The information I received before the course start was satisfactory.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The information I received before the course start was satisfactory.	4,5	0,7

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	0 (0,0%)
3	0 (0,0%)
4	0 (0,0%)
5	2 (100,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The communication with the teaching staff during the course was good.	5,0	0,0

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

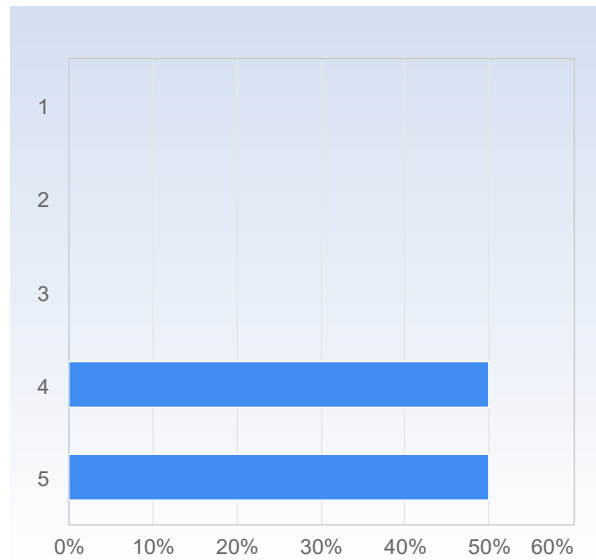| It was clear throughout the course what was expected of me.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
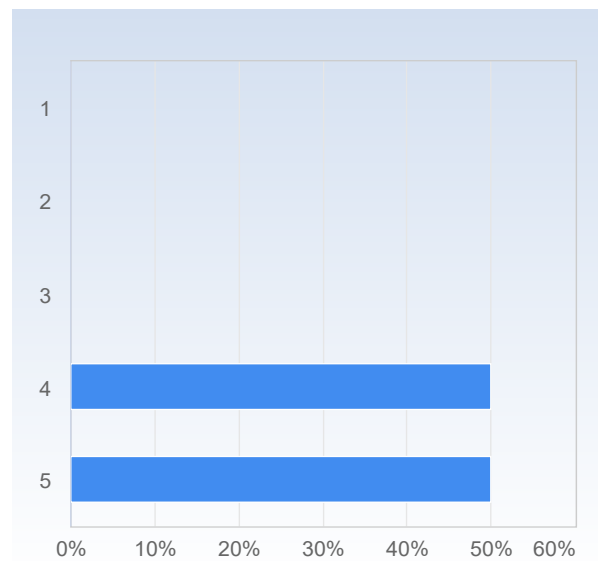
	Mean	Standard Deviation
It was clear throughout the course what was expected of me.	4,5	0,7

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	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
I have received valuable feedback from my teacher/teachers during the course.	4,5	0,7

The course had a reasonable workload.

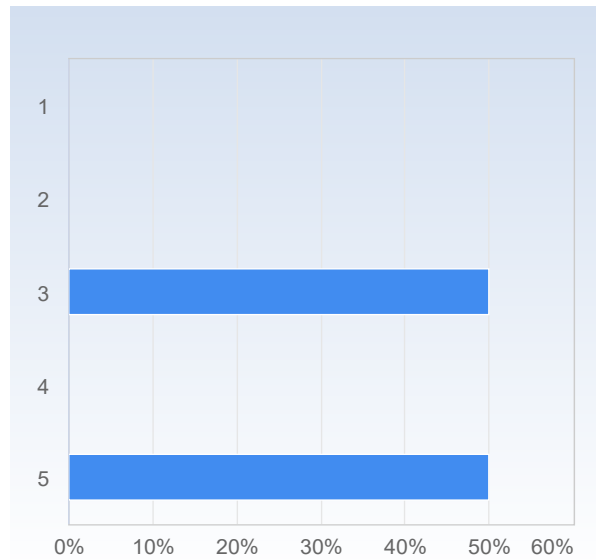| The course had a reasonable workload.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
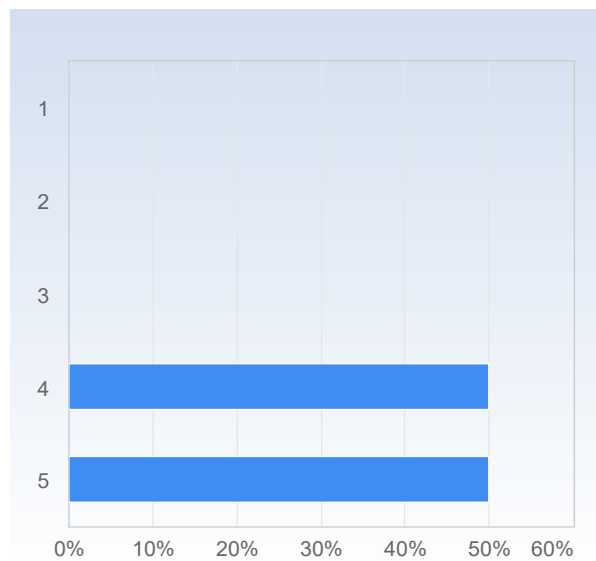
	Mean	Standard Deviation
The course had a reasonable workload.	4,5	0,7

The workload was evenly distributed throughout the course.

The workload was evenly distributed throughout the course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The workload was evenly distributed throughout the course.	4,0	1,4

The examination matched the contents and level of the course.

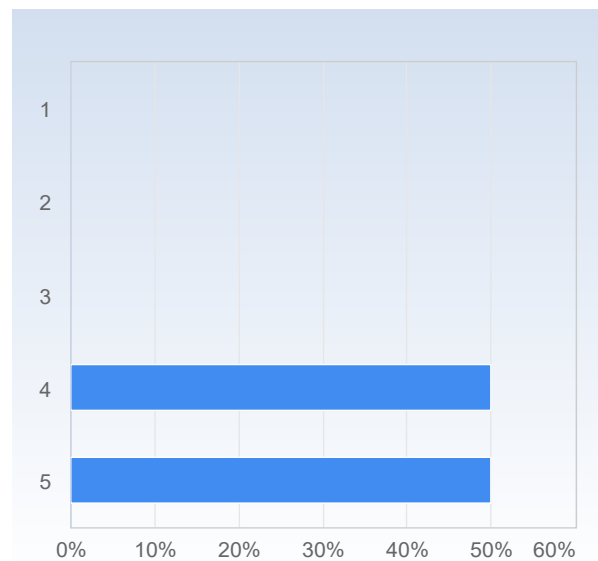| The examination matched the contents and level of the course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	0 (0,0%)
5	2 (100,0%)
Total	2 (100,0%)
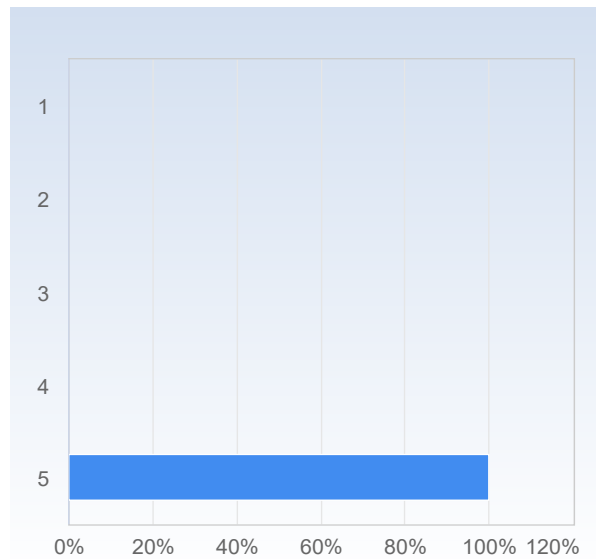
	Mean	Standard Deviation
The examination matched the contents and level of the course.	5,0	0,0

Overall, I am satisfied with the course.

| Overall, I am satisfied with the course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
Overall, I am satisfied with the course.	4,5	0,7

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

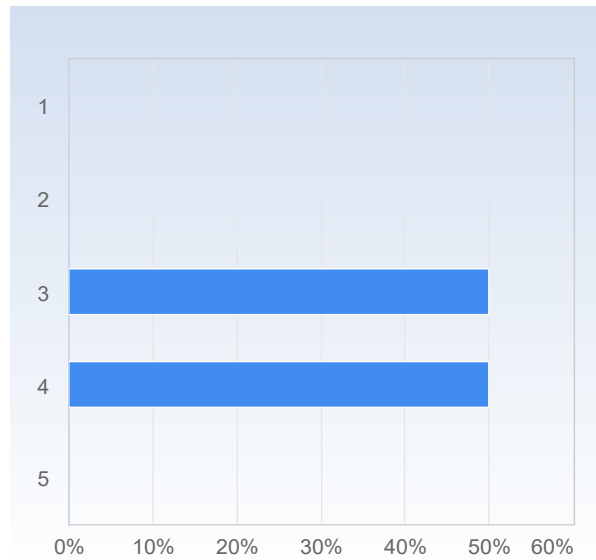## The course has increased my ability to read a mathematical text.

The course has increased my ability to read a mathematical text.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	2 (100,0%)
5	0 (0,0%)
Total	2 (100,0%)
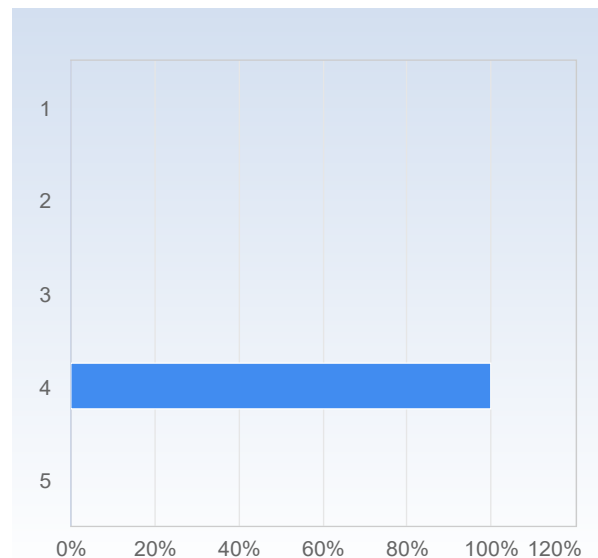
	Mean	Standard Deviation
The course has increased my ability to read a mathematical text.	4,0	0,0

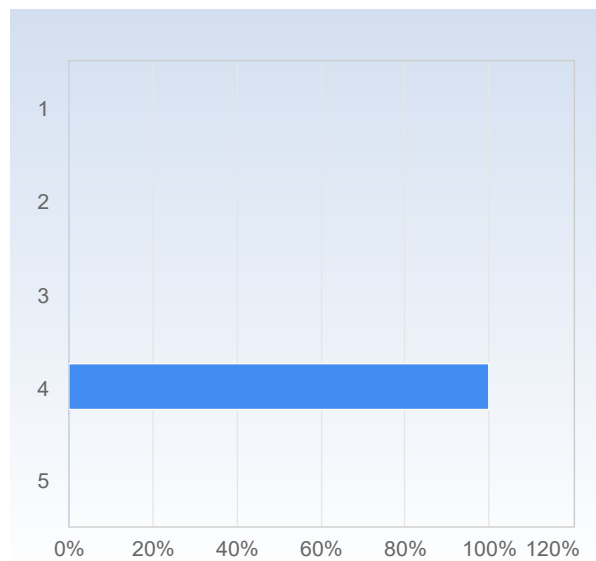## The course has increased my ability to communicate the subject in writing.

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

	Mean	Standard Deviation
The course has increased my ability to communicate the subject in writing.	3,5	0,7

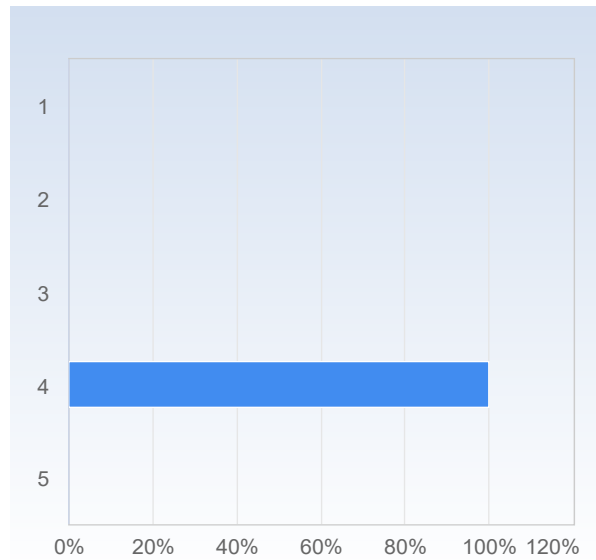## The course has increased my ability to communicate the subject orally.

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

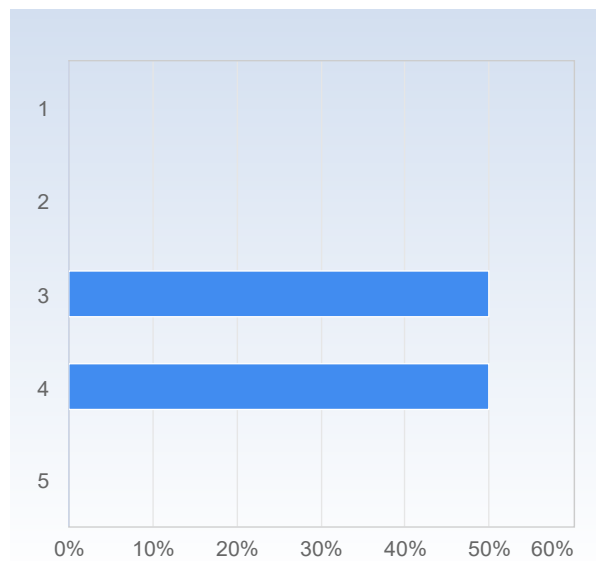|	Mean	Standard Deviation
The course has increased my ability to communicate the subject orally.	4,0	0,0

The course has increased my ability to cooperate.

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

	Mean	Standard Deviation
The course has increased my ability to cooperate.	4,0	0,0

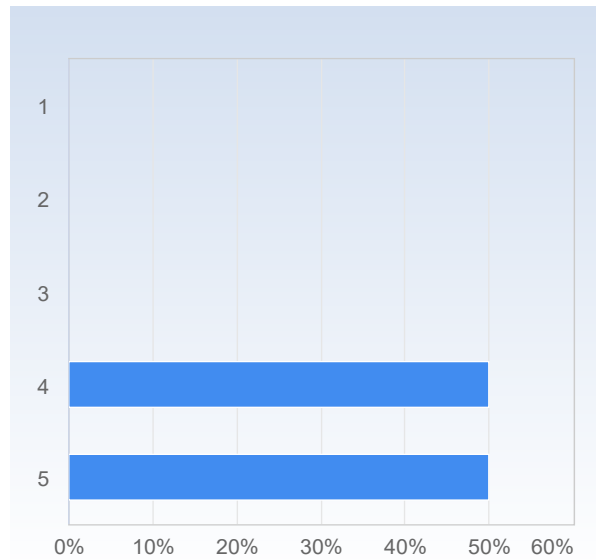## The course has increased my ability to search and process information.

The course has increased my ability to search and process information.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	1 (50,0%)
5	0 (0,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The course has increased my ability to search and process information.	3,5	0,7

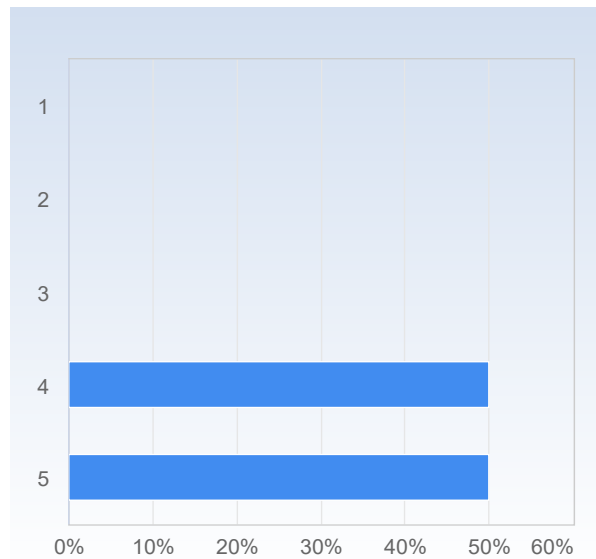## The course has increased my ability to analyze and solve problems.

The course has increased my ability to analyze and solve problems.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The course has increased my ability to analyze and solve problems.	4,5	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	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
As a result of this course, I feel confident about tackling unfamiliar problems.	4,5	0,7

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

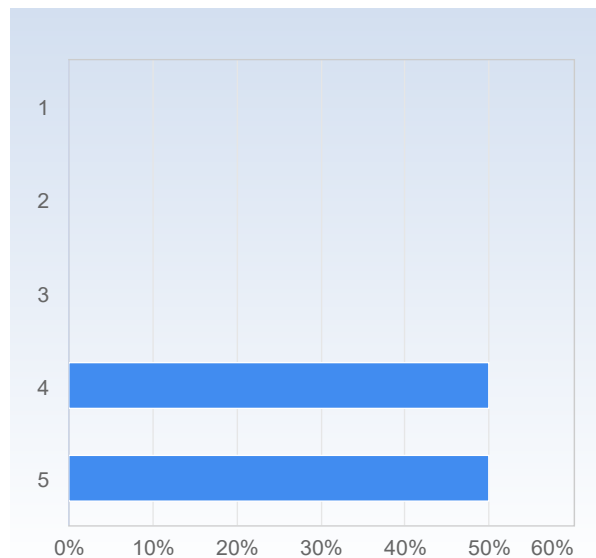### I preferred the oral project presentations over writing a report.

I preferred the oral project presentations over writing a report.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)
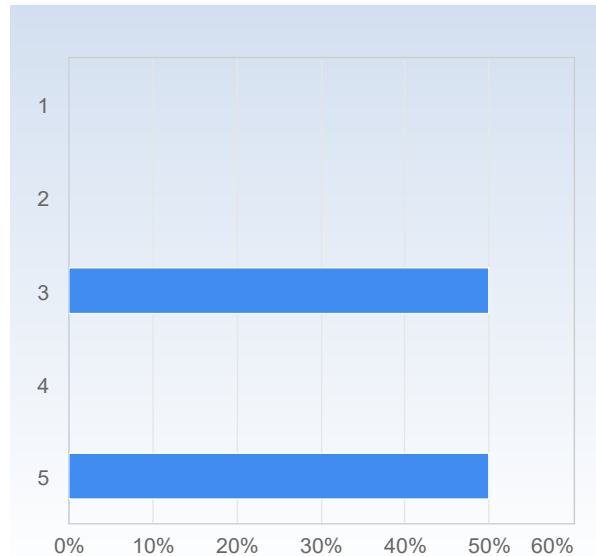
	Mean	Standard Deviation
I preferred the oral project presentations over writing a report.	4,0	1,4

I feel like I learned as much from the projects with oral presentation as from the one with a written report.
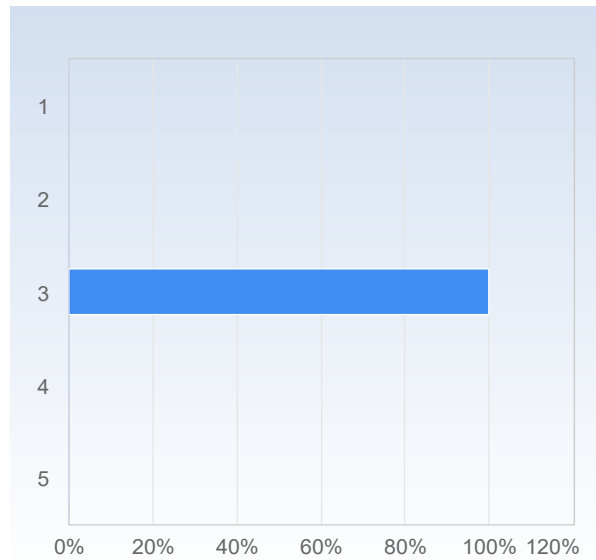
I feel like I learned as much from the projects with oral presentation as from the one with a written report.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
I feel like I learned as much from the projects with oral presentation as from the one with a written report.	4,5	0,7

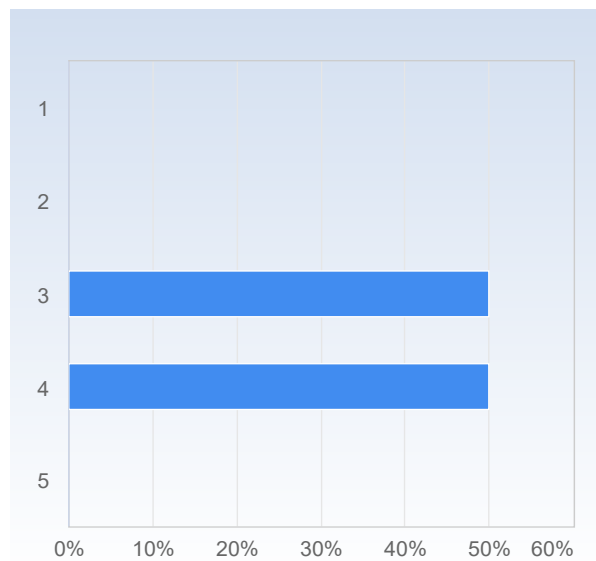# I received better feedback at the oral presentations than on my report.

I received better feedback at the oral presentations than on my report.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	2 (100,0%)
4	0 (0,0%)
5	0 (0,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
I received better feedback at the oral presentations than on my report.	3,0	0,0

It was easier to integrate an oral presentation in my schedule than a written report.

It was easier to integrate an oral presentation in my schedule than a written report.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	1 (50,0%)
5	0 (0,0%)
Total	2 (100,0%)

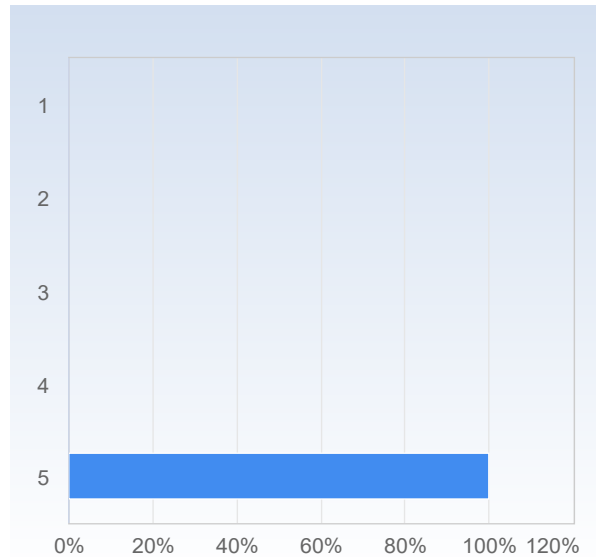|	Mean	Standard Deviation
It was easier to integrate an oral presentation in my schedule than a written report.	3,5	0,7

On the new lecture format for 2022
On the scale 1-5 select the option that best matches your opinion: 1= disagree completely → 3= partly agree → 5= agree completely

I prefer blackboard lectures supported by some slides over lectures mainly using slides supported by extra blackboard explanations.

I prefer blackboard lectures supported by some slides over lectures mainly using slides supported by extra blackboard explanations.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	0 (0,0%)
5	2 (100,0%)
Total	2 (100,0%)

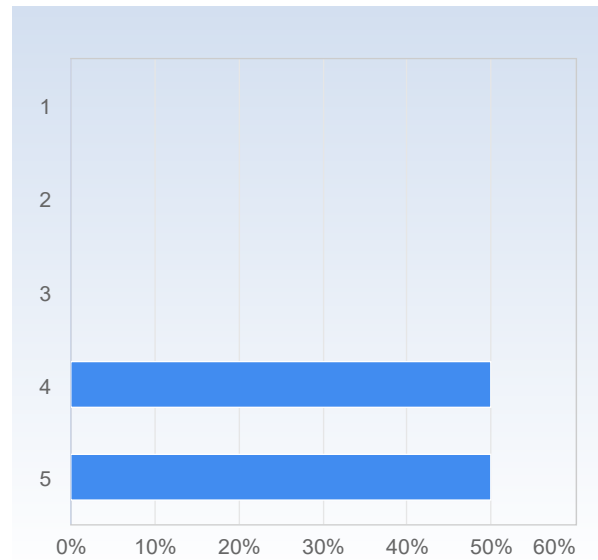|	Mean	Standard Deviation
I prefer blackboard lectures supported by some slides over lectures mainly using slides supported by extra blackboard explanations.	5,0	0,0

These blackboard lectures had an appropriate tempo.

These blackboard lectures had an appropriate tempo.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)
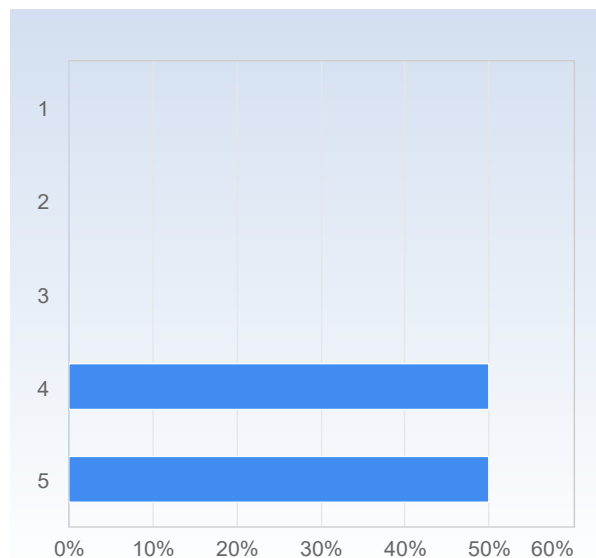
	Mean	Standard Deviation
These blackboard lectures had an appropriate tempo.	4,5	0,7

The handwritten lecture notes had a sufficient level of detail.

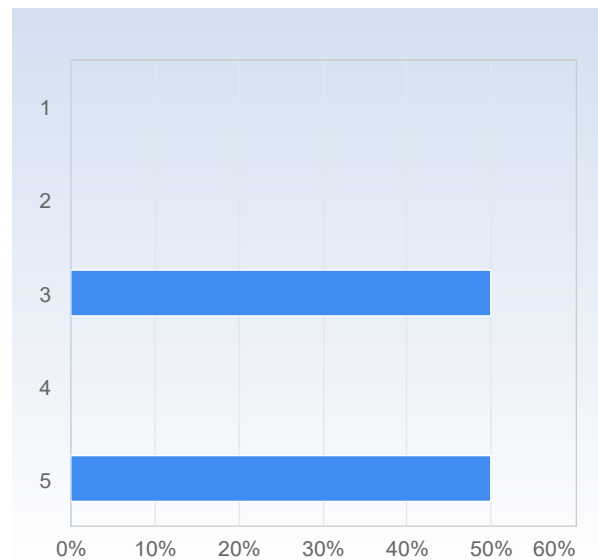| The handwritten lecture notes had a sufficient level of detail.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	1 (50,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
The handwritten lecture notes had a sufficient level of detail.	4,5	0,7

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

My general programming skills acquired in previous courses were sufficient to handle the practical part of this course.	Number of responses
1	0 (0,0%)
2	0 (0,0%)
3	1 (50,0%)
4	0 (0,0%)
5	1 (50,0%)
Total	2 (100,0%)

	Mean	Standard Deviation
My general programming skills acquired in previous courses were sufficient to handle the practical part of this course.	4,0	1,4