LUND UNIVERSITY
Faculty of Science

Centre for Mathematical Sciences
Division of Mathematics and Numerical Analysis

Course Analysis for NUMA01 Computational Programming with Python, Autumn 2024

Course Information

Lecturer: Robert Klöfkorn
Teaching assistants: Jimmy Kornelije Gunnarsson, Merrick Harmon, Lena Linsner, Leon Löfgren

Number of students:
112 newly registered and 14 re-registered.
29 students answered the course evaluation, 17 of them are enrolled on Bachelor's programme in Physics and 10 on Bachelor's programme in Mathematics.

Examination

Project: 96 students passed.

Final grades:
In all, 96 students, including 2 re-registered students, have got their final grade.

Course Evaluation

Summary of student's answers:
Overall 29 of 126 students registered in the course answered the evaluation, of which 17 belonged to the Physics program, 10 to the Mathematics program, and two exchange student.
Overall the course is well received and in particular the final projects are popular among the students. A vast majority of the students that answered the survey felt that they learned programming and can manage to write programs in mathematics and physics or made their first steps and got motivated to dive deeper into the subject. This is a very good result for a introductory course where roughly 50% of the participants have never programmed before. There are mixed reviews about the lectures and the training exercises where some students perfer other ways of engaing with the material. The vast majority also likes that the training exercises are on the same day as the lectures and an overwhelming majority was very satisfied with the teaching assistants. The group of students that never uses the book has declined, because reading assignments had been introduced.

Teachers' comments:

The course was given as "on campus" with a presentation of the material during the lecture and a follow-up training exercise to work with the topic of the day. The lecture material is provided as pdf, jupyter notebook and Python file. The material closely follows the course book "Scientific Computing with Python" by Claus Führer et al. In general, the students don't use the opportunity to submit their training assignments for teacher comments but then complain about the lectures being to uninteresting. This show the general confusion among first year students about how learning at the university level works. In this instance of the course a quiz was introduced to also

individually examine the Python knowledge of students. The overall result of the quiz was very good.

Changes from the previous course realization:

Compared to the previous realizations warming-up exercises have been added as well as reading assignments were introduced and increase the usuage of the course book. In addition a Python quiz has been installed to individually test the students knowledge.

Suggestions for the next course realization:

For the next course realizations various changes have already been implemented. Among those are:

- It will be mandatory for all students to provide a written statement about their contribution to the project work as well as to what extend generative AI has been used.
- And lastly, the quiz will be compulsory and extended and the level of difficulty will be increaseded. However, the overall oral presentations will remain unchanged.

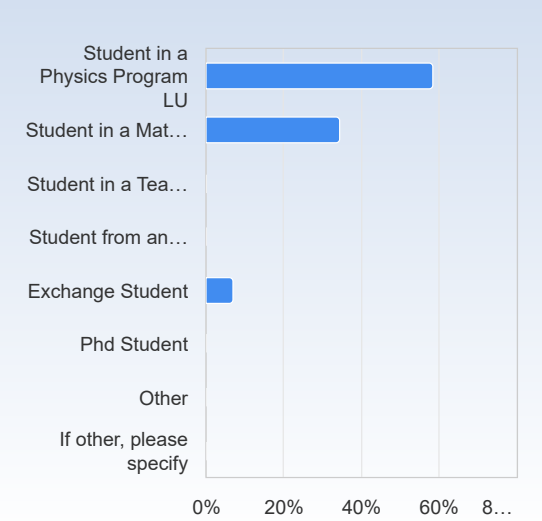
The teachers will carefully monitor the impact of these changes before new modifications are to be added to the course.

NUMA01HT24 Computational Programming with Python

Respondents: 125
Answer Count: 29
Answer Frequency: 23.20%

Your role in the course?

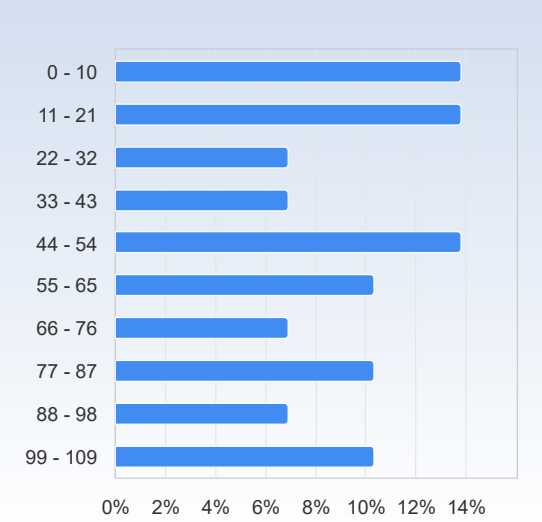
Your role in the course?	Number of responses
Student in a Physics Program LU	17 (58.6%)
Student in a Mathematics Program LU	10 (34.5%)
Student in a Teacher's Program LU	0 (0.0%)
Student from another Swedish university	0 (0.0%)
Exchange Student	2 (6.9%)
Phd Student	0 (0.0%)
Other	0 (0.0%)
If other, please specify	0 (0.0%)
Total	29 (100.0%)



	Mean	Standard Deviation
Your role in the course?	1.6	1.0

Your participation in the lectures.

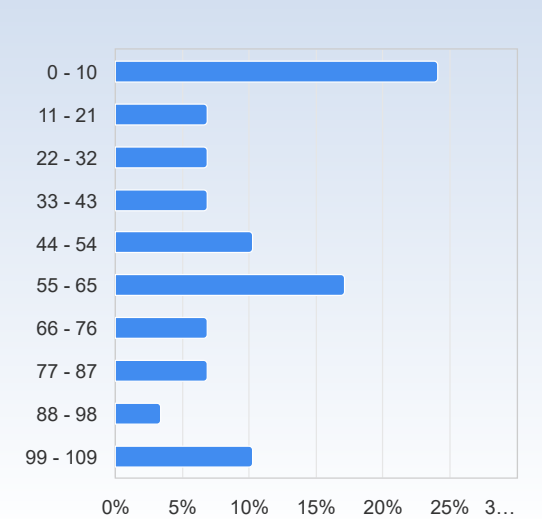
Your participation in the lectures.	Number of responses
0 - 10	4 (13.8%)
11 - 21	4 (13.8%)
22 - 32	2 (6.9%)
33 - 43	2 (6.9%)
44 - 54	4 (13.8%)
55 - 65	3 (10.3%)
66 - 76	2 (6.9%)
77 - 87	3 (10.3%)
88 - 98	2 (6.9%)
99 - 109	3 (10.3%)
Total	29 (100.0%)



	Mean	Standard Deviation
Your participation in the lectures.	51.4	30.7

Your participation in the training exercises.

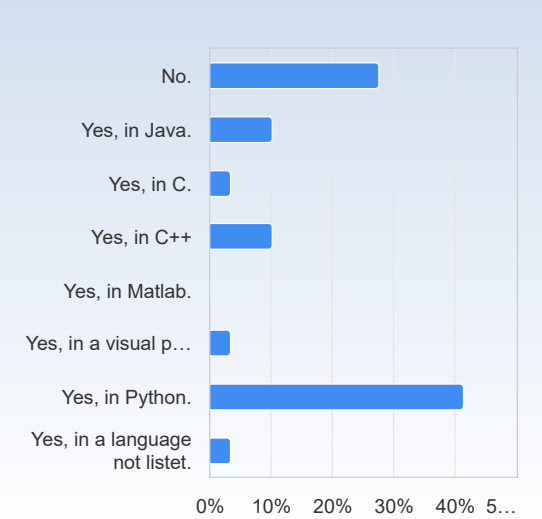
Your participation in the training exercises.	Number of responses
0 - 10	7 (24.1%)
11 - 21	2 (6.9%)
22 - 32	2 (6.9%)
33 - 43	2 (6.9%)
44 - 54	3 (10.3%)
55 - 65	5 (17.2%)
66 - 76	2 (6.9%)
77 - 87	2 (6.9%)
88 - 98	1 (3.4%)
99 - 109	3 (10.3%)
Total	29 (100.0%)



	Mean	Standard Deviation
Your participation in the training exercises.	46.2	33.4

Have you ever have written a computer program before the course start? (Please give the most relevant answer)

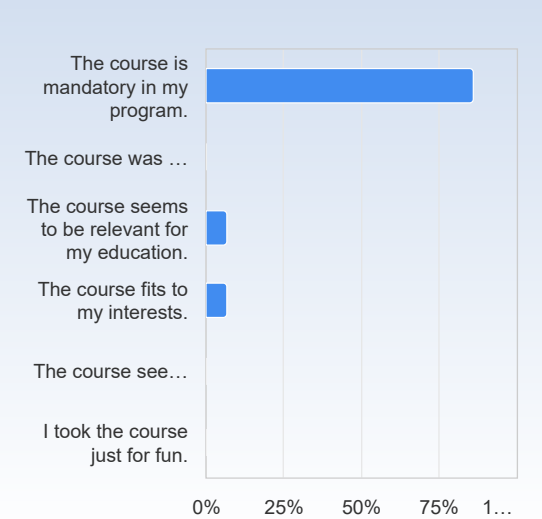
Have you ever have written a computer program before the course start? (Please give the most relevant answer)	Number of responses
No.	8 (27.6%)
Yes, in Java.	3 (10.3%)
Yes, in C.	1 (3.4%)
Yes, in C++	3 (10.3%)
Yes, in Matlab.	0 (0.0%)
Yes, in a visual programming language, like Snap! .	1 (3.4%)
Yes, in Python.	12 (41.4%)
Yes, in a language not listet.	1 (3.4%)
Total	29 (100.0%)



	Mean	Standard Deviation
Have you ever have written a computer program before the course start? (Please give the most relevant answer)	4.4	2.7

Why did you sign up for the course? (several answers possible)

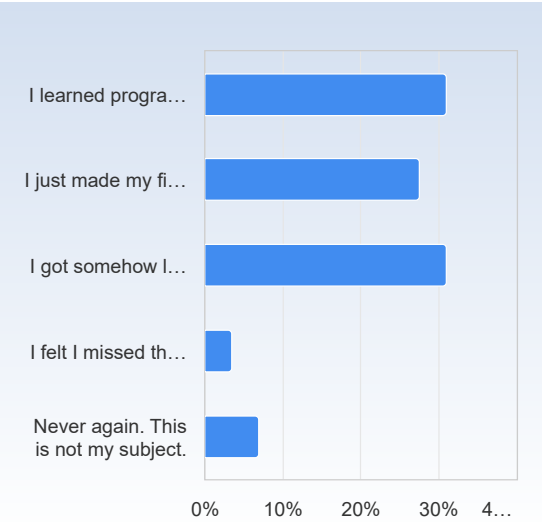
Why did you sign up for the course? (several answers possible)	Number of responses
The course is mandatory in my program.	25 (86.2%)
The course was strongly recommended in my program.	0 (0.0%)
The course seems to be relevant for my education.	2 (6.9%)
The course fits to my interests.	2 (6.9%)
The course seems to improve my chances on the work market.	0 (0.0%)
I took the course just for fun.	0 (0.0%)
Total	29 (100.0%)



	Mean	Standard Deviation
Why did you sign up for the course? (several answers possible)	1.3	0.9

Now that the lectures are done, my impression is.....

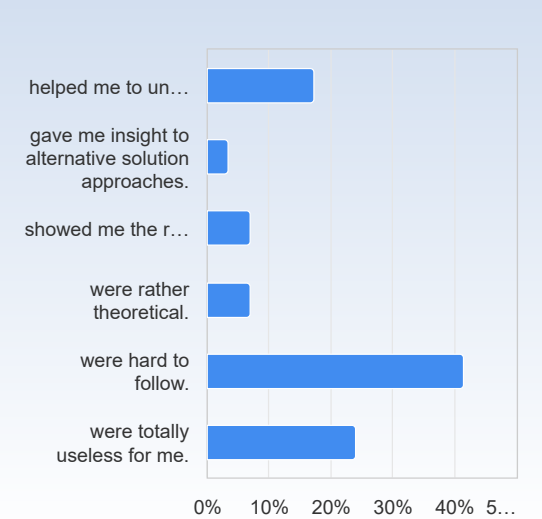
Now that the lectures are done, my impression is.....	Number of responses
I learned programming and I feel that can manage to write programs in mathematics and physics.	9 (31.0%)
I just made my first steps and got motivated to dive deeper into the subject.	8 (27.6%)
I got somehow lost during the course, but I think I will catch up.	9 (31.0%)
I felt I missed the point with this course and will retake it.	1 (3.4%)
Never again. This is not my subject.	2 (6.9%)
Total	29 (100.0%)



	Mean	Standard Deviation
Now that the lectures are done, my impression is.....	2.3	1.2

The lectures ....

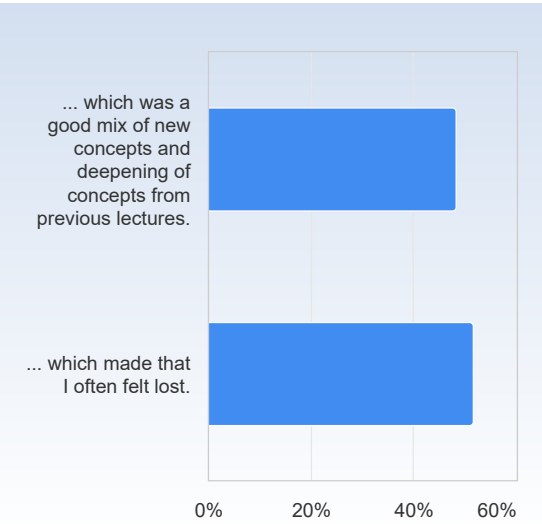
The lectures	Number of responses
helped me to understand concepts and details.	5 (17.2%)
gave me insight to alternative solution approaches.	1 (3.4%)
showed me the relevance of programming in mathematics /physics.	2 (6.9%)
were rather theoretical.	2 (6.9%)
were hard to follow.	12 (41.4%)
were totally useless for me.	7 (24.1%)
Total	29 (100.0%)



	Mean	Standard Deviation
The lectures	4.2	1.8

The material used during lectures was ordered in a way ...

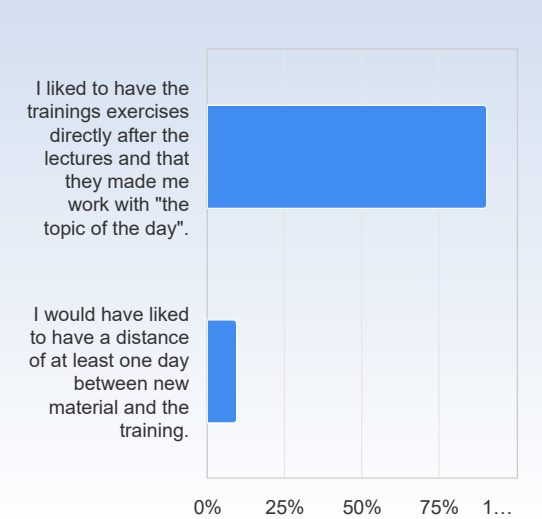
The material used during lectures was ordered in a way ...	Number of responses
... which was a good mix of new concepts and deepening of concepts from previous lectures.	14 (48.3%)
... which made that I often felt lost.	15 (51.7%)
Total	29 (100.0%)



	Mean	Standard Deviation
The material used during lectures was ordered in a way ...	1.5	0.5

Trainings Exercises

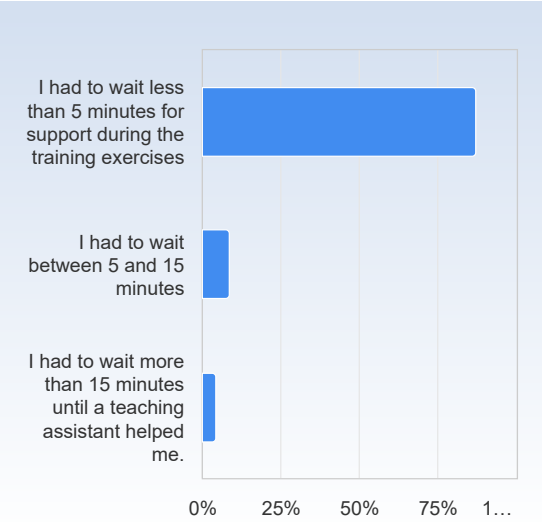
Trainings Exercises	Number of responses
I liked to have the trainings exercises directly after the lectures and that they made me work with "the topic of the day".	19 (90.5%)
I would have liked to have a distance of at least one day between new material and the training.	2 (9.5%)
Total	21 (100.0%)



	Mean	Standard Deviation
Trainings Exercises	1.1	0.3

Support

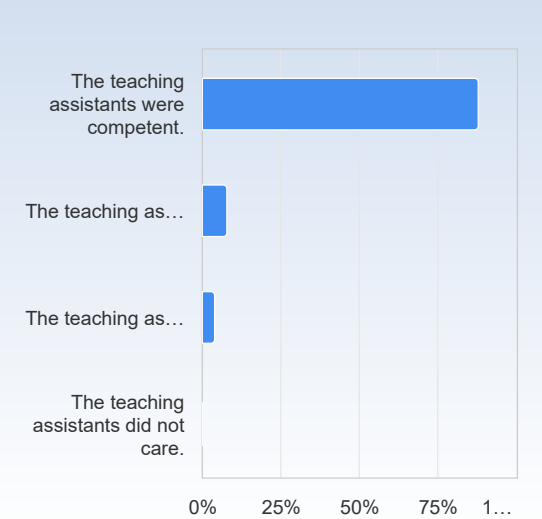
Support	Number of responses
I had to wait less than 5 minutes for support during the training exercises	20 (87.0%)
I had to wait between 5 and 15 minutes	2 (8.7%)
I had to wait more than 15 minutes until a teaching assistant helped me.	1 (4.3%)
Total	23 (100.0%)



	Mean	Standard Deviation
Support	1.2	0.5

Competence

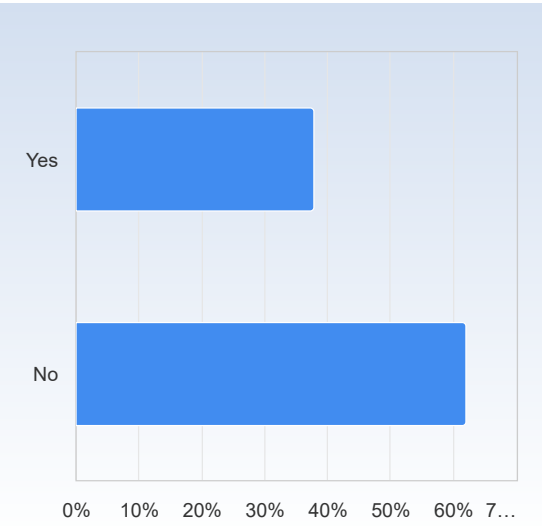
Competence	Number of responses
The teaching assistants were competent.	22 (88.0%)
The teaching assistant sometimes could not answer but found another one to help.	2 (8.0%)
The teaching assistents tried there best but gave me often wrong answers.	1 (4.0%)
The teaching assistants did not care.	0 (0.0%)
Total	25 (100.0%)



	Mean	Standard Deviation
Competence	1.2	0.5

Taining exercises. I worked in a group.

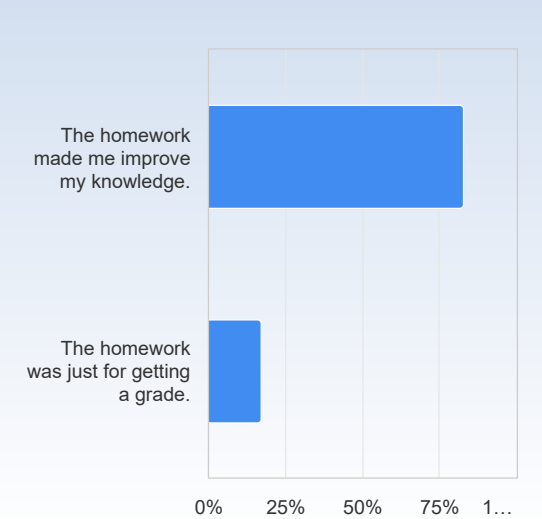
Taining exercises. I worked in a group.	Number of responses
Yes	11 (37.9%)
No	18 (62.1%)
Total	29 (100.0%)



	Mean	Standard Deviation
Taining exercises. I worked in a group.	1.6	0.5

Homework

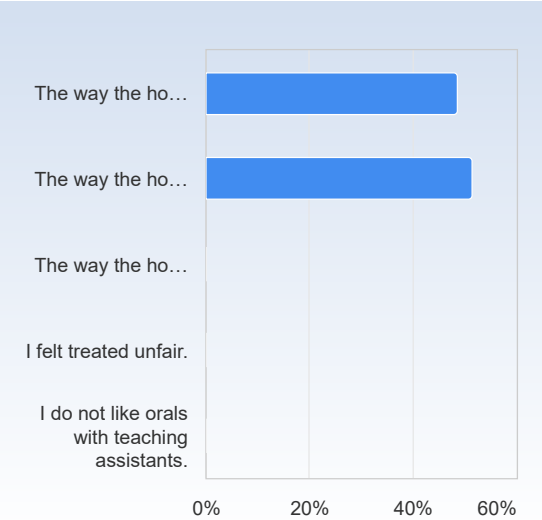
Homework	Number of responses
The homework made me improve my knowledge.	24 (82.8%)
The homework was just for getting a grade.	5 (17.2%)
Total	29 (100.0%)



	Mean	Standard Deviation
Homework	1.2	0.4

The homework presentations.

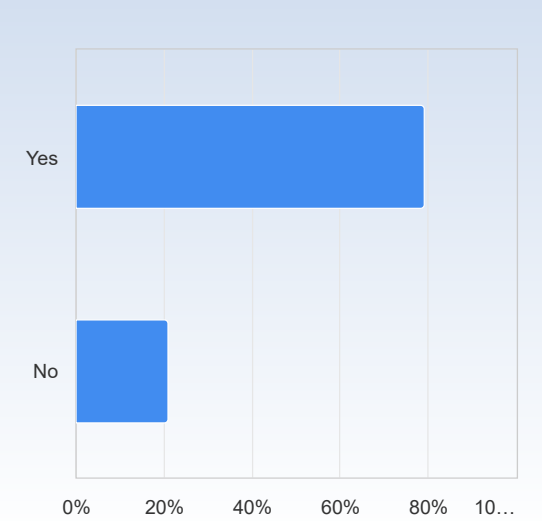
The homework presentations.	Number of responses
The way the homeworks were presented gave me a chance to get extra feedback.	17 (63.0%)
The way the homeworks were presented gave me a chance to show and test my knowledge.	18 (66.7%)
The way the homework was presented did not match to my effort I put into this work.	0 (0.0%)
I felt treated unfair.	0 (0.0%)
I do not like orals with teaching assistants.	0 (0.0%)
Total	35 (129.6%)



	Mean	Standard Deviation
The homework presentations.	1.5	0.5

I found it helpfull to work in groups for the homework

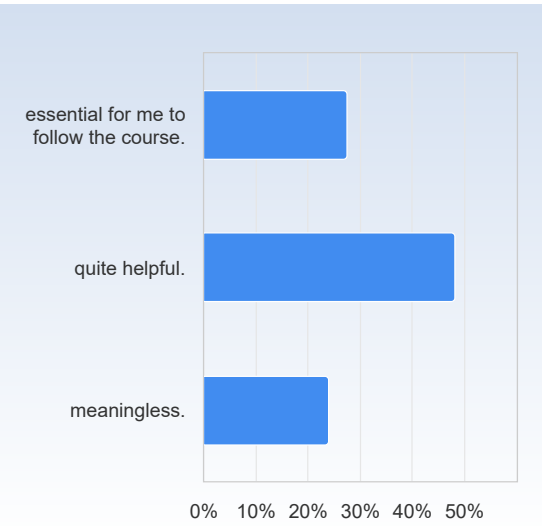
I found it helpfull to work in groups for the homework	Number of responses
Yes	19 (79.2%)
No	5 (20.8%)
Total	24 (100.0%)



	Mean	Standard Deviation
I found it helpfull to work in groups for the homework	1.2	0.4

Course material. The slides and Jupyter Notebook files were ...

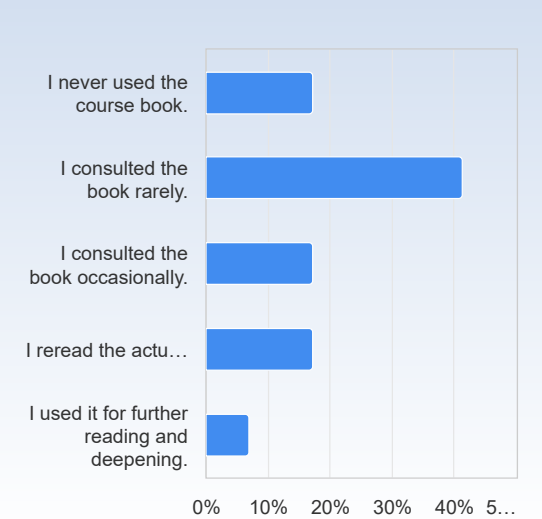
Course material. The slides and Jupyter Notebook files were ...	Number of responses
essential for me to follow the course.	8 (27.6%)
quite helpful.	14 (48.3%)
meaningless.	7 (24.1%)
Total	29 (100.0%)



	Mean	Standard Deviation
Course material. The slides and Jupyter Notebook files were ...	2.0	0.7

The course book.

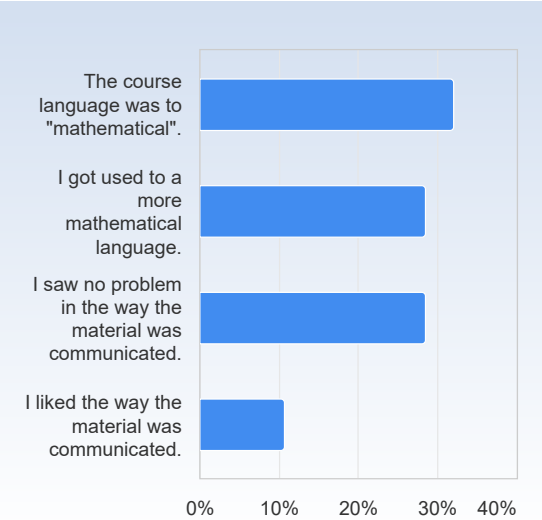
The course book.	Number of responses
I never used the course book.	5 (17.2%)
I consulted the book rarely.	12 (41.4%)
I consulted the book occasionally.	5 (17.2%)
I reread the actual sections of the lecture in the course book.	5 (17.2%)
I used it for further reading and deepening.	2 (6.9%)
Total	29 (100.0%)



	Mean	Standard Deviation
The course book.	2.6	1.2

Course style. Language

Course style. Language	Number of responses
The course language was to "mathematical".	9 (32.1%)
I got used to a more mathematical language.	8 (28.6%)
I saw no problem in the way the material was communicated.	8 (28.6%)
I liked the way the material was communicated.	3 (10.7%)
Total	28 (100.0%)



	Mean	Standard Deviation
Course style. Language	2.2	1.0