

## ***Course Report WASP Graduate School***

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### **Mathematics for Machine Learning (4hp)**

Semester: Spring 2024

Number of registered students: 18

Answering frequency (course evaluation): 39 (%)

### **Examination results**

Number of students examined: 13

Fail: 0 (%)

Pass: 100 (%)

(One student only handed in one homework assignment and four students did not participate, i.e., did not hand in any solutions)

### **Brief summary of student viewpoints and suggestions**

#### **Results of WASP base-line quantitative questions**

- What is your overall rating of the course (1-5) Average: 4.1
- Did you enjoy the course? (1-5) Average: 4.0
- Was it time well spent? (1-5) Average: 4.1

#### **Answers to free text-questions to be (shortly) summarized under “Strengths” and “Weaknesses”**

- What was the best aspect of the course?
- What would you suggest improving?
- What advice would you like to give to future participants?
- Other comments. Is there anything else you would like to add?

#### **"Strengths" according to students<sup>2</sup>**

- Well balanced course material.
- Good homework assignments.
- Good lectures.

#### **"Weaknesses" according to students<sup>2</sup>**

- Optimization was an unknown subject, a bit harder to grasp.

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<sup>1</sup> The report should be written by the examiner together with the teachers and possibly others, such as teaching assistants

<sup>2</sup> Based on both quantitative results and key viewpoints from students' free-text answers

- The book is not so deep. There was a need for other sources when doing the homework assignments.
- The level of the course was not as deep as expected.

### **Comments from teachers on the implementation and outcome of the course<sup>3</sup>**

- The course setup was based on the setup of Yurii Maliskyii of two years ago. In general, this worked well. The very diverse background of students is a challenge. Many students have a rather high level of mathematical background, and for them the course is more of a refresher. Other students are not so strong in mathematics, and for them the course is more of a challenge. The instructor tried to adapt the pace and presentation to the group.
- The homework assignments were mapped to the two pairs of lecture days. Homework assignment 1 covered linear algebra and calculus, homework assignment 2 covered probability and optimization. There were 30 credits given to each of the four subtopics, and 10 required for a pass. There was a big spread of the results. For such a course, AF as instructor thinks this is an ok setup. There is an option to work more on the material, which many students did, or just make enough to pass with some margin, which some students did.
- Regarding deadlines for homework assignments. Deadlines were set, to give a pace of the course. Extensions were given if asked for, but a strict deadline of mid June 2024 was set and communicated. One student only completed homework assignment 1.
- All students that handed in both homework assignments passed. From an instructor point of view, AF is satisfied with this result. Four students did not hand in any solutions to homework assignments.

### **Proposed changes/comments/measures**

- This is an introductory course. As such, there is likely to be a spread in level of students. Some students wanting to go deeper into the material and others finding the level too high is to be expected. AF is in favor of changing the name to “Introduction to mathematics for machine learning”. One student commented on the level being too low in the course evaluation. However, this is meant to be an introductory course.
- The teaching was done by hand writing on an iPad. The slides were made available after the lecture. This worked and allowed some flexibility based on questions that came up.
- Overall, AF is satisfied with the outcome of the course. A similar setup might be used also in the future.

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<sup>3</sup> Including changes effected during the course