Course analysis MATA21 Spring 2020

Lecturer: Jan-Fredrik Olsen (second half)
Seminar teachers: Jonathan Holmqvist, Adem Limani, Douglas Svensson (first half)

Registered students:

- 67 first time registered and 58 re-registered = 125 registered.

Result diagnostic test: 62 students took the diagnostic test at the start of the term (the results in parentheses are from HT18 since no diagnostic test was administered HT19.)

- 4-6 points: 52% (HT18: 42%)
- 0-3 points: 48% (HT18: 58%)

Result of the final exams (here, and below, results from Fall 2019, Fall 2018 and Spring 2018 in parenthesis where applicable): Here are the results of the final exam (we remark that the students could get up to 15% bonus points for the final exam from a voluntary mid-term exam):

- Ordinary exam: out of **63** students, there were **27 U, 23 G, 13 VG** (HT19: 36 U, 18 G, 16 VG).
- Re-sit exam: out of **27** students, there were **15 U, 12 G, 0 VG** (HT19: 38 U, 20 G, 6 VG).
- In total: out of **74** students, there were **26 U, 35 G, 13 VG** (HT19: 59 U, 38 G, 22 VG).

That is, roughly 65% (HT19: 50%, HT18: 72%, VT18: 55%) of the students taking the exam got a pass, or better, and roughly 18% (HT19: 18%, HT18: 19%, VT18: 14%) got a VG.

Result of the project: In addition to the exam, to get a passing grade on the course, the students needed to do a project. The project consisted of 3 homework assignments with obligatory work-seminars and a trial exam. To be approved on the project, the students needed a passing grade on all but one element.

In total **43** (HT19: 53, HT18: 88, VT18: 65) students got a pass on their project this term.

Result of course survey: Below, we have summarized the results of the course survey (the full results, including all free-text answers, are found further below in this document). In total, **38** (43, 30) students responded. Below, we indicate with an asterisk if the formulation of the question differs between this and any of the previous terms. Moreover, we point out the scores from the terms HT18 and VT18 were given on a scale 1-4, and they have been rescaled to be comparable with the new scale 1-5.

1. My prior knowledge has been sufficient to learn the contents of this course: **4.0** (4.0, 4.0, 4.4)
2. I have participated actively in the course: **3.9** (3.7, 4.3, 4.4)
3. Total number of hours spent on course per week: **24.6** (21.3, 21.5, 28)
4. The way the course has been taught and organized suited me*: **3.6** (3.5, 3.8, 3.9)

5. The number of teacher lead activities (lectures, seminars, etc) has been satisfactory: **4.3** (4.4).
6. The lectures were valuable for my learning*: **4.0** (3.5, 4.5, 4.5)
7. The seminars were valuable for my learning*: **3.6** (3.4, 3.4, 3.6)
8. The exercise classes were valuable for my learning: **2.5** (2.6)
9. The mentor meetings (SI) have been valuable for my learning: **2.3** (2.5)
10. The assignments have been valuable for my learning*: **4.2** (3.6, 3.8, 4.1)
11. Studying on my own has been valuable for my learning*: **4.2** (4.3, 3.8, 4.5)
12. **(New)** Studying together with fellow students was a valuable learning resource (before/after Covid-19): **3.6/2.9**
13. The course literature was a valuable learning resource*: **4.0** (4.1, 4.4, 4.0)
14. The information I received before the course start was satisfactory: **3.9** (3.7)
15. The communication with the teaching staff during the course has been good: **4.0** (4.2)
16. It has been clear throughout the course what has been expected of me: **3.8** (3.8)
17. I have received valuable feedback from my teacher/teachers during the course: **3.4** (3.5)
18. The course had a reasonable workload: **3.7** (3.7, 3.9, 4.0)
19. The workload has been evenly distributed throughout the course: **3.7** (3.4)
20. The examination matched the contents and level of the course: **3.9** (4.1, 4.5, 4.1)
21. **(New)** The format of the final exam worked at least as well for me as a classical exam: **3.4**
22. Using Python helped me understand the basic concepts of this course*: **3.5** (2.7, 3.3, 3.0)
23. Overall, I was satisfied with the course*: **4.0** (4.2, 4.5, 4.4)
24. The course has increased my ability to read a mathematical text: **4.1** (4.2, 4.3, 4.4)
25. The course has increased my ability to communicate the subject in writing: **3.7** (4.0, 4.1, 4.3)
26. The course has increased my ability to communicate the subject orally: **3.2** (3.6, 3.6, 3.9)
27. The course has increased my ability to cooperate*: **3.0** (2.8, 3.5, 4.1)
28. The course has increased my ability to search and process information: **3.1** (3.4)
29. The course has increased my ability to analyze and solve problems: **3.9** (3.8)
30. As a result of this course, I feel confident about tackling unfamiliar problems: **3.4** (3.3, 3.6, 4.1)

Teacher's commentary on the result of the course survey:

- The average total number of hours spent by students per week has increased to 24.6, which is unfortunate (however, the standard deviation is rather large at 12.6).
- The average score for question 23 has decreased from 4.2 to 4.0. While still a good score, this continues a negative trend from previous terms.
- The highest scoring questions are:
    - 5 (number of teacher led activities)
    - 10 (assignments have been valuable)
    - 11 (studying on my own)
    - 24 (increased ability to read mathematical text)
- The lowest scoring questions are

    - 9 (mentor (SI) meetings)
    - 8 (exercise classes)
    - 12 (studying with fellow students after Covid-19)
    - 27 (increased ability to cooperate).
- In the 20 free-text answers on what students found positive post Covid-19, most students pointed out that they appreciated the effort made by the teachers to adapt the course to the online setting. Some point out specific details which they appreciated (e.g., videos on technical topics, "frågeställare").
- In the 20 free-text answers on what students think should be improved if the Covid-19 situation continues in to the fall, 5 actually just point out that the course is good the way it. The remaining comments point out the following:
    - Make sure to have physical meetings (1)
    - Better communication between teachers and students (3)
    - Better planning of exams and assignments (4)
    - Help students cooperate (1)
    - Help students be more active during Zoom lectures (2)
    - More and smaller examinations throughout the course (1)
- In the 17 free-text answers on discriminatory behavior, 16 students say that they not experienced any such thing. The remaining answer says that he/she felt that students that were not active in class were less likely to be helped outside of class than others. Although this is a reasonable comment, the teachers have a hard time feeling that this is a big problem as few students are active, and most students that were active made comments using aliases in the Zoom chat. That is, there were few students that we were in a position to "positively" discrimitate.

Lecturers evaluation of the course: A major challenge this term was the passage to online teaching in response to the Covid-19 epidemic. This put a lot of strain on preparing basic material and also on post-production of video-material to be put online. The lecturer was unhappy with the low turnout rate for lectures in the second half of the term (post Covid-19) when only 25-30 students would attend. Designing a reasonable exam was a huge challenge. In the end, we decided on a Zoom surveilled classical written exam. A trial exam was held one week before the actual exam so that everyone could make sure that they had suitable technical equipment. The pass rate among those turning up for the exam was reasonably high, however relatively few showed up.

It is worth mentioning that all first-time registered students who showed up to the exam passed. This number matches more or less the number of students who regularly showed up for class.

Evaluation of changes made since previous edition of the course: Mostly due to Covid-19, we introduced the following changes to the course in the second half of the term.

- Videos containing the most technical parts of the course were published ahead of lectures and seminars. This allowed students to study these parts at their own pace, and also allowed the lecturer to focus on the bigger picture.
- Weekly modules, with one introductory lecture, two seminars, and one lecture that summarized the material of the week and focused on the material that students found particularly hard.

- Partially open-ended assignment using the SIR-model to simulate the spread of Covid-19. This assignment really allowed some of the students to go deep into the material.

Suggestions for changes in the next edition of this course: A challenge for the Fall 2020 edition of the course is to adapt it to a hybrid format, where parts of the course are held online and parts on campus. Specifically:

- We need to make sure that there are enough campus-based teaching activities, so students have the chance to form networks.´
- We need to increase the number of small examinations throughout the term to help students structure their studies.
- We need to work out ways for lectures and seminars to involve students.
- We should continue to produce films containing the more technical parts of the course.
- Since exercise classes and SI-meetings are bare used by students, and are resource intensive, these should be disbanded and the resources should be diverted to increasing the overall quality of teaching. A replacement for these activities could be having “office hours” where the teachers are available for discussions.