

A comprehensive, periodic evaluation of MAE4000 – Data Science Autumn 2018

Given that the academic year 2018-2019 is the starting year of the master programme in Assessment and Evaluation this course is part of, we conducted a two-fold evaluation: One midway evaluation in two informal focus groups and one more formal in anonymous written form through a nettskjema at the end of the course.

Midway Evaluation

The key point midway the course was the concern on being able to keep up with the *programming component* of the course. Especially the assignments were experienced as not tailored at the appropriate level. This caused at least half of the student group to be a bit stressed and most students would have appreciated more feedback or reassurance on how well they were doing on this component. This leads us to conclude that the initial concept of providing material for a lot at home preparation in a flipped classroom format and with big assignments to put what you learnt to the test, did not pan out as intended.

Despite these struggles, at the end of the year the majority of the group did feel like they made huge steps in R, the programming language used in the course, but for the next year, we need to significantly smoothen the transition to the active use of a programming language for novices. We intend to

- Spend more in-class time on the start-up phase: on the basics, but also on the manner of thinking with a programming language;
- Include some short run-through instruction-videos for at home;
- Split up the big assignments in a more gradual sequence of sub-assignments. The scaffolding would allow to provide more direct feedback to the students and would also make the learning curve more explicitly visible;

Final Evaluation

Students: 10 out 18 answered the nettskjema survey = response rate of 56%.

The survey was sent out electronically after the exam and inquired towards the students' agreement with selected statements about the exam and more general aspects of the course. Space was provided to more freely elaborate on their responses, comment on issues not in the statement lists, or provide suggestions for next year.

The Exam

	Strongly Agree	Agree	Disagree	Strongly Disagree
There was sufficient time to prepare before the scheduled exam.	4	5	1	0
There was sufficient a priori information given on the nature of the exam.	5	1	1	3
The time to complete the exam was sufficient.	8	2	0	0
The exam questions did not come as a surprise to me.	3	3	3	1
The exam adequately covered the whole span of the course contents.	3	4	2	1
The exam questions were clearly formulated.	4	5	0	1
I feel I have a pretty good idea about how I will score on the exam.	1	3	6	0

The exam was rated overall in order, with some dissident voices and an indication of uncertainty in the end outcome. The next cohort of students will have access to the exams from the previous year which should clarify what can be expected even more and is in line with what the disagreeing students requested as seen in their comments.

General course aspects

	Strongly Agree	Agree	Disagree	Strongly Disagree
The information provided on the UiO course page was sufficiently clear.	3	3	4	0
The information provided on the CANVAS course page was sufficiently clear.	3	4	3	0
The learning outcomes of the course were met.	1	3	5	0
The connections between the different course modules were clear.	0	6	4	0
The instructor(s) explained the topics clearly.	1	2	5	2
The instructor(s) demonstrated concern about whether I was learning.	2	4	3	1
The instructor(s) inspired and motivated me and encouraged my interest in the course content.	3	4	3	0
The speed at which the course proceeded was exactly right for me.	1	0	5	4
The course improved my critical thinking skills.	2	7	1	0
I would recommend this course.	1	5	3	0

The ratings on general aspects of the course showed quite some diversity and conflicting opinions among students. This corresponds to our own impression that we did not manage to adequately reach everyone within the heterogeneous group of students and that some animosity arose among some students due to the experienced struggles with the programming component of the course. The ratings do indicate the non-optimality of the speed of the course and clarity of instruction; the latter two going hand in hand.

We will take this into account for the next year, by

- Offering the course in a less condensed format, adding extra weeks to the current 8 week setup.
- Reducing some details in the course contents that although useful, might not help in establishing the basic foundations; in other words, sometimes less is more.
- Reducing the struggles with the programming component will benefit the course in general as students indicated that the immediacy of the trial & error nature of the programming component in combination with too big and challenging assignments grabbed all their focus at the cost of the actual contents and hurt their self-efficacy with respect to the course.

Despite differences in opinions between the respondents on many of the topics, students uniformly agreed upon the contribution of the course to their critical thinking skills.

Furthermore, even students commenting on the experienced complications and difficulties with the programming assignments, did point out that they learnt a lot and that they did value learning R & programming. *Hence, the course concept is good and appreciated, but the delivery needs to be further optimized.* A challenge we will happily take on for next year's edition!