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The new introductory mathematics courses for civil bachelor engineers consist of Mat1A and Mat1B. Both courses are 10 ECTS point courses. This text is about Mat1A, which all civil bachelor engineers take on their first semester at DTU. This course has run three times now, fall 2023, fall 2024 and fall 2025. Peter Beelen and Ulrik Engelund Pedersen from DTU Compute are responsible for Mat1A.

The main mission of the Mat1A course is to teach students introductory mathematics as well as possible. Among others, the following didactical principles are used:

- Blackboard lectures are used to give an in-depth explanation of the material. This gives a deeper understanding over the material, thereby improving both student motivation and deep learning.

- Pen and paper are used by the students to solve exercises about new mathematical topics and concepts. In this way students become familiar with many algorithmical details, improving computational thinking.

- Afterwards the students learn how to use Python (SymPy) to solve problems. Several of these problems were solved by the students in earlier weeks using pen and paper. In this way the students are trained not only to use Python, but also able to judge the validity of the computer output, thus promoting critical thinking. Students are encouraged to use AI for learning which SymPy commands to use and for fixing syntactical errors.

- Three voluntary homework assignments are posed during the semester, meant to provide feedback on how to succinctly write down mathematical reasoning and computations with intermediate steps. Though voluntary, around two thirds of all students handed in these assignments.

Another clear goal when designing the new course was to improve the motivation and attendance rate of the students, while not lowering the mathematical level. To this end dedicated course material was developed including:

- A new textbook, written to be strongly aligned with exercises and lectures. The book can be used in several ways depending on the mathematical interest and curiosity of the students. It also contains some extra voluntary reading material meant only for the brightest students.

- Many new regular exercises designed to help students coming to grips with the material gradually.

- Python thematic exercises, showing how to compute the most important mathematical objects in the course using a computer. Online MC-tests were held during the semester testing the students' knowledge on how to use Python. These tests count towards the final grade.

- Weekly online MC tests based on Möbius with which students can score bonus points. These tests are made available towards the end of each teaching week and are meant to train the basic concepts explained in that week once more. The tests are popular among the students and motivate them further to participate in the teaching activities.

There are strong indications that the didactical principles and the new course material work very well, even better than expected. Indeed, the course evaluation in the fall of 2025 proved to be exceptionally good. In the course evaluation the question "I have learned a lot from this course" got a weighted average answer of 4.6 out of 5. This is the same very high score as in the old mat1-course. However, the question "The learning activities motivated me to work with the material" now got 4.0 out of 5, while in previous introductory mathematics courses this question typically scored 3.7 out of 5. For comparison: the average score to this question for courses at DTU Compute is 3.7 out of 5 and the average score to this question for courses at DTU in general is 3.6 out of 5. The answer rate of the course evaluation was also high compared to other courses (64%), again indicating a high level of student engagement.

The attendance rate for Mat1A in the fall of 2025 was very good. It was higher than in the past years and also higher than the attendance rate for the old mat1-course several years before 2023. Indeed, most of the weeks all three auditoria 041, 042 and 043 in building 303A were needed to house the students that came in person to attend the lectures (both for the lectures given by Peter Beelen and the ones given by Ulrik Engelund Pedersen). On top of that, eventually around 200 students followed the lectures online.

Grades are based on the MC-tests related to the Python thematic exercises, the weekly online MC-tests and a 4 hour pen-and-paper exam with all written aids.To have this exam form for the course was done for the first time in December 2025. Before that half of the exam was electronic with all aid allowed. We believe that this change of exam form has further helped the students' learning and motivation to work with the course material due to the constructive alignment of the exam with the rest of the course. Indeed, even though the exam from December 2025 was not easier than exams in the years before, the students did significantly better.