NSC164: Linear Algebra

Credits: 4
Level: Intermediate
Location: Sci217, MTh 1.30–2.50pm
Instructor: Matt Ollis (office: Sci218)
Email: `matt@marlboro.edu`
Website: `https://cs.marlboro.college/cours/fall2018/linear_algebra/home`

Blurb. Next to Calculus, this is the most important math course offered. It is important for its remarkable demonstration of abstraction and idealization on the one hand, and for its applications to many branches of math and science on the other. This course will cover linear algebra in n-dimensional space. Matrices, vector spaces and transformations are studied extensively.

The portfolio system. The assignments and grading might be a little different to what you are used to in a math class. During the semester you will submit a portfolio roughly every two weeks on the following topics:

1. Linear Systems
2. Vector Spaces
3. Maps Between Spaces
4. Change of Basis and Determinants
5. Similarity

The core material for each will correspond approximately to a chapter of Hefferon's *Linear Algebra (3rd. Ed.)*, a free book available online here:

`http://joshua.smcvt.edu/linearalgebra/`

and linked from the course website. You will select exactly what to put in the portfolios to demonstrate your mastery of the material. There will also be other pieces—such as mathematical typesetting, writing proofs, reflections on your work—added to the expectations for a portfolio as the semester progresses. We will talk more (much more) about what they should look like in class. The best four of these five portfolios contribute 60% of your grade.

The final 40% of your grade will come from a final portfolio in which you bring everything you've learned together and add one or more new direction depending on your interests. The course will end with "orals", a conversation with an outside evaluator who has read your final portfolio. The outside evaluator will be another Marlboro faculty member; probably Kaethe, if what you've done is straight linear algebra, but maybe someone else if you've made a connection to another discipline.

Attendance, class participation and prompt submission of portfolios are expected. In particular, you should be ready to share what you've been working on in class at various levels of formality and, if you have some skills that others don't (using LaTeX, for example) then helping others develop those skills is part of your work of the course. Your performance in these areas will influence your final result by up to one letter grade.

What now? Make sure you can find the course website and the Hefferon text online. Show up tomorrow ready to get stuck in, including talking about your mathematical background and what you're hoping to get from the course.

A couple of final comments. You are expected to be aware of the college's policy on academic integrity and to abide by it. It can be found on the college website, and is linked from the course website. Please come and talk to me if anything is unclear. If you want accommodations under the ADA, contact Catherine O'Callaghan (`cocallag@marlboro.edu`).

This is a four credit course. This means you should be expecting to spend in the region of twelve hours each week (including class time) working on it.