

Math 17: Beyond Calculus

Peter Doyle

Dartmouth College
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The goal of this course is to introduce students to a world of math that lies beyond (and beside) calculus, and give them tools with which to explore this world. Specifically, that means constant practice generating questions and hypotheses, and exploring them with the aid of the programming system *Mathematica*. This will be a ‘studio math’ course, akin to a studio art course. Students will have time and support during and after class for their computer explorations. There will be weekly Show and Tell sessions, where students give brief presentations of their programming in progress. The course will culminate with a final project of the student’s choosing.

Readings and classes will introduce a variety of topics that all aspiring math majors should know. Many will be drawn from Stillwell’s *Mathematics and Its History*, the primary course text. The focus will be on geometry and algebra, but no topic will be called out of bounds.

Course texts

- *Mathematics and Its History*
John Stillwell
ISBN-10: 144196052X — ISBN-13: 978-1441960528
Amazon price: 37.02
- *Elements of the Theory of Functions*
Konrad Knopp
ISBN-10: 0486601544 — ISBN-13: 978-0486601540
Amazon price: 9.72

Organization

Instructor

Peter Doyle, 331 Kemeny Hall. My office/lab hours are Monday and Friday after class, 3:15-5:00. Email me any time to ask a question or set up a meeting.

Class meetings

The class meets in the 2 slot, MWF 2:10–3:15. We will be using the X-hour, Th 1:20-2:10. Keep this time open!

When you will not be able to attend class, I would appreciate it if you would send me email in advance.

Grades

Grades will be based on what I think you have put into and gotten out of the course, as manifested through class participation, Show and Tell presentations, the final project, and other assignments.

Honor Code

You are encouraged to consult any source you please. Just make sure you cite it. So, if you got someone (other than me) to help you with a project, acknowledge this prominently. Ditto for code gleaned from the web. I don't expect you to name everyone who answered a passing question, but any substantial help needs to be acknowledged.

Disabilities

I encourage any students with disabilities, including "invisible" disabilities such as chronic diseases and learning disabilities, to discuss appropriate accommodations with me, which might help you with this class, either after class or during office hours. Dartmouth College has an active program to help students with disabilities, and I am happy to do whatever I can to help out, as appropriate.