

GMU Economics Math Camp 2018

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Classroom: Planetary Hall 120

Date/time: August 18 (12:00 - 16:00),
August 20-23 (19:00 - 22:00)

Course Description

Brief review of mathematical concepts from linear algebra, calculus, set and probability theory. Given time, also an extremely brief review of topics in optimization, proofs, differential equations.

Textbook

- Mathematics for Computer Science by Eric Lehman and Tom Leighton (2004)
It is a free textbook available online. We will be using this small 300 page version, but there is an extensive 1000 page version, also free (CC BY-SA 3.0).
- Mathematical methods for economic theory by Martin J. Osborne (2016) at <https://mjo.osborne.economics.utoronto.ca/index.php/tutorial/index/1/toc/c>
Also free online. We will use it for differential equations.

I will post all additional things at <https://arthurdolgoplov.net/teaching/mathcamp>.

Preliminary Schedule

August 18 (12:00-16:00) **Basics**

- Linear algebra, matrices, eigenvalues and eigenvectors;
- Review of calculus, differentiation, integration.

August 20 (19:00 - 22:00) **Structures**

- Relations, orders, graphs, paths, a hint of measurement theory;
- Set theory.

August 21 (19:00 - 22:00) **Methods**

- Optimization (constrained, unconstrained, convex, integer), lagrangians;
- First order differential equations.

August 22 (19:00 - 22:00) **Probability**

- Probability: spaces, random variables, combinatorics, Bayes rule, random walks.

August 23 (19:00 - 22:00) **Proofs**

- Proofs: types of proofs, logical formulas.

If you would like, you can also use this poll to mark the topics to be covered:

<https://doodle.com/poll/u86gksfk7qnkrhea>