Math Boot Camp for the Political and Social Sciences

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Course Description

The goal of this course is to revise some mathematics up to a calculus level and practice some useful techniques. In particular this will prepare you for material that will be relevant to future research in various areas.

Class Times and Places

Date	Time	Room
Mon, Aug 26	10am - 3pm	MCS 148
Tue, Aug 27	10am - 3pm	MCS 148
Wed, Aug 28	10am - 3pm	PSY B51
Thu, Aug 29	10am - 3pm	PSY B51
Fri, Aug 30	12pm - 3pm	PSY B51

Resources

Here are some of my favourite ways to learn with this course.

- **Textbook:** Moore, Siegel, *"A mathematical course for political and social research"*
- **Fellow students:** I learn best when I talk to other people and work with friends. Maybe this will work for you, too?
- **Previous Website:** In previous years the website for this course was **math.bu.edu/people/mrmorse/bootcamp/**.

Class Structure

Except on the Friday when we start at midday to allow you all time to do other orientation things, each day will be a morning class 10am-12pm, then a working lunch 12pm-1pm, and then another class session 1pm-3pm. Each day there will be problem sets which we will spend time working on in groups. I further recommend you spend some time on them in your own time for practice.

There is no assessment or grades, so we get to have fun and just learn things! I like to have an interactive classroom, so please ask lots of questions and let me know what topics/techniques would be most useful for you to cover.

Preliminary Schedule

The schedule below is liable to change wildly. Most prominently, if you decide there are topics you'd like to spend more or less time on, I am more than happy to discuss that possibility.

- **Monday:** *(Algebra, Functions)* Arithmetic, variables, solving algebraic equations, linear functions and graphs [Moore-Siegel, Chapters 1-3]
- **Tuesday:** *(Linear Algebra)* Vectors, geometry, matrices, systems of linear equations, Markov chains [Moore-Siegel, Chapters 12-14]
- **Wednesday:** *(Calculus 1)* Nonlinear functions and derivatives, graphs, rules for differentiation [Moore-Siegel, Chapters 5-6]
- **Thursday:** *(Calculus 2)* Integrals, The Fundamental Theorem of Calculus, extrema and optimization [Moore-Siegel, Chapters 7-8]
- **Friday:** *(Multivariable Calculus)* Functions of multiple variables, Optimization, Laplace multipliers [Moore Siegel, Chapters 15-16]