

Mathematics for Social Scientists

Part 0: Introduction

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Course — Mathematics for Social Scientists

- Logistical information
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 - Grading: **Pass/Fail**, written exam
- About me:
 - Doctoral Student (Political Science)
 - Political Economy, Distributive Politics, Accountability, Latin American Politics.
 - Previously: MSc in Development Economics at Uni Göttingen, BA in Economics at Federal University of Pernambuco.

Course Structure and Material

- Logic, sets, functions — Analysis — Linear algebra — Probability
- Lectures with slides. Tell me if the lectures are too fast or too slow
- Exercises - optional but recommended
- I might give some reading assignments
- Books:
 - Knut Sydsaeter and Peter Hammond, *Essential Mathematics for Economic Analysis*
 - Timothy M. Hagle, *Basic Math for Social Scientists*
 - Jeff Gill, *Essential Mathematics for Political and Social Research* — I base my material on this

Why is mathematics important to social scientists?

- *Mathematics allows for orderly and systematic communication.*

Ideas expressed mathematically can be more carefully defined and more directly communicated than narrative language, which is susceptible to vagueness and misinterpretation.

- *Mathematics is an effective way to describe our world.*

Simple examples from human behaviour: Violence increases in warm weather, increased education reduces support for the death penalty, etc.

What will we learn?

- Confidence with mathematical language and thought.
- Essential mathematical principles.
- Specific tools for quantitative work: matrix algebra, regression.

Everything we learn will be either fundamental or useful.

Mathematical Confidence

- People often have false beliefs about mathematical subject and their learning abilities.

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Here are some things to keep in mind:

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 - If you believe that you can learn, you will learn more.
 - Mathematics is **learnt by doing**, not reading/ listening. It's essential to try. Mistakes are good for your brain.

Sources

- The course material draws heavily from previous lecturers,
- Any suggestions are much appreciated to build on this material
- Feel free to suggest (mathematically relevant) papers in the social sciences for us to discuss