

# PSCI 401 —Math Fundamentals for Political Science

University of Rochester Fall 2020  
Time: TR 11:00–11:50AM Location: Zoom  
Instructors: Jacque Gao  
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Office Hours: Thursdays 2-4 PM  
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Office Hours: Fridays 2-4 PM

**Course Description:** This course provides students with the mathematical background that is needed for the graduate program in Political Science. Topics covered include logic, set theory, functions, basic calculus, and probability. Instructor permission required for undergraduate students.

**Adjustment to Online Course:** The course will take place online via Zoom. The link to the class will be sent separately via email. In general, students are expected to turn on the camera and interact with the instructors just like in a normal class. Students with any concern or situation that affects their ability to do so are encouraged to talk to the instructors.

**Grades:** Throughout the course, students will be required to submit 7 – 8 problem sets. Students are encouraged to work together on problem sets. But the final answers must be written and submitted separately. Grading will be assigned based on the following scheme:

- Problem sets (10% each)
- Class Participation (20 – 30%)

**Schedule:** There is no mandatory textbook for the course. The course will be based the instructors' notes and related readings for each topic. Lectures will be made available to students. There are several suggested textbooks that students might find useful as references:

- Duggan and Fey, *Analytical Methods in Political Economy: The Mathematics of Voting*
- Duggan, *Analytical Methods in Political Economy: The Mathematics of Spatial Modeling*
- Simon and Blume, *Mathematics for Economists*
- DeGroot and Schervish, *Probability and Statistics*, 4th edition

**We will cover the following topics.**

1. Logic
2. Set theory
3. Functions
4. Univariate calculus
5. Multivariate calculus
6. Optimization
7. Probability and distributions
8. Matrix algebra
9. OLS

**Accommodations for Students with Disabilities:** This class respects and welcomes students of all backgrounds and abilities, and we encourage you to talk with us about any concern or situation that affects your ability to complete your academic work successfully. Students requiring accommodations should contact the Office of Disability Resources: 1-154 Dewey Hall [disability@rochester.edu](mailto:disability@rochester.edu) (585) 275-9049

**Academic Integrity:** All assignments and activities associated with this course must be performed in accordance with the University of Rochester's Academic Honesty Policy. More information is available at: <http://www.rochester.edu/college/honesty/index.html>.