

Computational Methods

Professor Hagle
30:204
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This course will provide graduate students who have little or no previous mathematical training with sufficient mathematical literacy to understand quantitative political science. The readings and problem sets will be drawn from Freilich and Greenleaf, and the section on matrix algebra from Ostrosky and Koch. I have also listed several books that may be helpful for those who are a bit uncomfortable with math and math courses.

Texts (ordered through Iowa Book and Supply except where noted)

Required

- Ostrosky and Koch, Introduction to Mathematical Economics, chapter 8 (you will need to make copies of this from ones that I have)
- Coursepack, available at Zephyr Copies (124 East Washington), containing course notes and a sheet of math symbols and expressions.

Recommended

- Freilich and Greenleaf, Calculus: A Short Course with Applications, 2d edition (may now be out of print)
- Freilich and Greenleaf, Student Solutions Manual (may now be out of print)
- Kleppner and Ramsey, Quick Calculus: A Self-Teaching Guide, 2d ed.
- Paulos, Innumeracy
- Pettofrezzo, Matricies and Transformations

In addition to being available for purchase at IBS, I have placed all the texts (except for Ostrosky and Koch) on reserve at the Reserved Reading Room in the Main Library.

Grading and Assignments

Grades will be based on weekly problem sets (50%) and an open-book, take-home final exam (50%). The final exam will be handed out on Monday, November 15th, and will be due by 5:00 PM on Friday, November 19th.

Students With Disabilities / Departmental-College Complaint Procedures / Plagiarism And Cheating

The College of Liberal Arts has required that I inform you of its guidelines regarding accommodations for students with disabilities, departmental/college complaint procedures, and the policy on plagiarism and cheating. This material is contained in a handout that can be obtained from the Political Science office in 341 Schaeffer Hall. It can also be found on-line at http://www.uiowa.edu/~polisci/undergrad_progs/statement.pdf.

Topics And Readings

Date	Topic	Readings
1. Introduction		
8/24	Introduction	*Tobias, entire (on reserve, not ordered)
8/26	Algebra Review	Paulos, entire
8/31	Algebra Review	(F&G through part 3) pp. 391-401, 1-54
9/2	no class (tentative)	
9/7	Sets	
9/9	Combinations	
9/14	Limits	pp. 102-109
9/16	Continuity	
2. Differential Calculus		
9/21	Definition of a Derivative	pp. 55-101, 110-112
9/23	Theorems on Differentiation	pp. 113-126
9/28	Extrema of Functions	pp. 126-144
9/30	Applications of Maximization	pp. 144-161
10/5	Partial Derivatives	pp. 313-337
10/7	Extrema of Multivariate Functions	pp. 337-368
10/12	Constrained Optimization	pp. 343-353, 369-379
3. Integral Calculus		
10/14	Anti-Differentiation	pp. 225-241
10/19	Definite Integrals	pp. 241-257
10/21	Techniques and Applications	pp. 258-286
4. Matrix Algebra		
10/26	Matrices	(O&K from here on) pp. 283-297
10/28	Determinants	pp. 299-317
11/2	Inverses	pp. 318-323
11/4	Cramer's Rule	pp. 323-328
11/9	More on Multivariate Extrema	pp. 329-336
11/11	More on Multivariate Extrema	