

University of Houston Department of Political Science
POLS 6398: MATH FOR SOCIAL SCIENTISTS
Summer 2007

Class meetings¹: *Mondays thru Thursdays, 12:00-2:00 pm, PGH 405*

Instructor: *Iñaki Sagarzazu*

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Objectives

This course provides a general introduction to linear algebra, calculus and probabilities in the social sciences, with an emphasis on applications in political science.

Book

- Gill, Jeff. 2006. *Essential Mathematics for Political and Social Research*.

Cambridge, England: Cambridge University Press.

Evaluation

Students are expected to attend all classes and complete all the required reading before each class session. Evaluation will be based on the following:

4 Review and Practice Assignments - 40%

Midterm (July 19) - 30%

Final Exam (August 9) - 30%

Academic Honesty

Absolutely no form of academic dishonesty will be tolerated in this class. Incidents of plagiarism, cheating, or other forms of academic dishonesty will result in a failing grade for the course (0.0) and appropriate steps to remove that person from the program will be taken.

ADA Statement

The American with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability

¹ *Class will meet on Friday July 6th: "Notes about 2007 Summer Session Meeting Days: Summer Session IV - in general, classes meet Mondays through Thursdays, plus Friday July 6." UH Summer 2007 Calendar*

requiring an accommodation, please contact UH's Center for Students with Disabilities (CSD) at (713) 743-5400.

Schedule

- 0. Introduction (July 5)**
- 1. Basics (July 6)** *Gill Chapter 1*
 - a. Notation
 - b. Functions
- 2. Linear Algebra (July 9 – 17)** *Gill Chapters 3 and 4 (except 4.8 and 4.9)*
 - a. Vectors
 - i. Basics: row, columns, notation & conformability
 - ii. Arithmetic & Properties
 - b. Matrix
 - i. Basics
 - ii. Arithmetic & Properties
 - iii. Trace
 - iv. Determinant
 - v. Rank
 - vi. Norms
 - vii. Inversion
- 3. Review session & Midterm (July 18-19)**
- 4. Calculus (July 23 – July 31)** *Gill Chapters 5 (except 5.6, and 5.7.2) and 6.2, 6.3, 6.4*
 - a. Limits
 - i. Limits & Properties
 - b. Derivatives
 - i. Derivation & Differentiation
 - ii. Derivatives rules
 - iii. Partial derivatives
 - iv. Higher order derivatives
 - v. Maxima, Minima & Root Finding
 - c. Integrals
 - i. Area under the curve
- 5. Probabilities (August 1 – 7)** *Gill Chapter 7*
 - a. Counting
 - b. Sets
 - c. Probability Theory
- 6. Review session & Final (August 8-9)**