

POS5744
Fundamentals of Political Research
Fall 2016
Thursday 1145-1415
Bellamy 113

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Course Description

This course is an introductory overview of the basic mathematical skills that political science graduate students will need to draw on during their graduate student years and beyond. The primary goal of this course is to provide students with a firm understanding of a variety of basic mathematical skills. The secondary goal is to present these mathematical skills in the context of social science research, with an emphasis on increasing student awareness of why and how such skills become necessary in the course of conducting original research.

Accordingly, upon successful completion of the course students will be able to:

- apply basic mathematical operations
- understand when and why certain mathematical operations are required by social scientists.
- recognize and hopefully avoid the various pitfalls of faulty application of mathematics.
- attain basic mathematical literacy with respect to research published in the discipline's top journals.

To meet these objectives, this course will place great emphasis on weekly problem sets and active discussion of solutions to assigned problems. In this respect, weekly seminars will be run more in the style of a mathematics workshop with students presenting their solutions to assigned problems and the instructor introducing new materials and examples in the classroom. As such, students' active participation in the weekly seminar will be essential to their achieving the objectives outlined above.

Texts

There is one required text for the course. There are several recommended sources as well. Abbreviations for the readings assigned in the course schedule are shown in bold.

Will Moore and David Siegel. 2013. *A Mathematics Course for Political and Social Research*. Princeton University Press.

Recommended Resources:

The following are excellent online sources of mathematical concepts and explanations.

<http://Math.com>
<http://mathworld.wolfram.com/>
[http://www.khanacademy.org/\(Math\)](http://www.khanacademy.org/(Math))

Carl Simon and Lawrence Blume. (S&B) 1994. *Mathematics for Economists*. New York: Norton.
Hagel, Timothy. 1995. *Basic Math for Social Scientists: Concepts*. Volume 108.
1996. *Basic Math for Social Scientists: Problems and Solutions*. Volume 109.
Fox, John. 2009. *A Mathematical Primer for Social Statistics*.
Alpha Chiang and Kevin Wainwright. 2005. *Fundamental Methods of Mathematical Economics*.

Boston: McGraw Hill.
Krishnan Namboodiri. 1984. *Matrix Algebra: An Introduction*. : Sage Publications.
Thompson, Silvanus P. and Martin Gardner. *Calculus Made Easy*

In addition to the course texts, you will also have occasional readings assigned from journals and other texts. Chapters from other texts and journal articles from journals not available here at FSU will be on electronic reserve in the library. It is the student's responsibility to photocopy any assigned readings and be prepared to discuss them for each class period.

Grading Policy

Final grades will be assessed through various measures of students' performance in the course. The final grade will reflect students' abilities in each of the major areas of the course:

2 In-class Exams, 45%, Comprehensive Final Exam, 20% , Weekly Classroom Participation, 35%

Exams

Students will take two in-class exams during the semester. These exams will be given on the day scheduled in the syllabus. The exam will cover all materials as listed in the syllabus. Usually an exam will cover all material presented in the previous 3 seminars.

Comprehensive Final Exam

Students will take an in-class comprehensive final exam. The date of this exam will be for **December 15, 1145-1415**.

Class Participation and Attendance

Students are expected actively participate in each seminar. Given the nature of this course, a heavy component of a student's grade will be based upon their participation and in class performance on assigned homework in the form of weekly problem sets. Students will be asked to present their solutions to assigned problem sets in class and will be graded on their active participation in this respect. At the end of each class session, I will assign each student one of four possible participation grades, 100%, 90%, 80%, 70%. I will then take the average of these grades at the end of the semester to calculate a student's class participation//attendance course component.

Administrative Policy

Student Responsibilities

Students are responsible or planning ahead by checking the Syllabus for upcoming readings and assignments. Students are responsible for all assigned readings. **NOT ALL READING MATERIAL WILL BE COVERED IN CLASS.** Therefore it is imperative that students complete all readings and integrate them into the course as applicable. In addition, all students are responsible to contribute to a positive learning environment for fellow students. The instructor retains the right to ask a student to leave the classroom if the student is negatively contributing to the learning environment.

Extra-Credit Work

Under no circumstances will extra credit work be permitted.

Late Work

All assignments are to be turned in on the announced due date. Late assignments will not be accepted without legitimate excuses. The instructor retains the right to determine legitimate excuses.

Exams

Students are expected to be present for all exams at the beginning of the exam period. For exams

occurring during the regular semester, students will be allotted the first hour of class time for the exam. For final exams, students will be allotted the entire final exam period that the University has appropriated. A ten-minute grace period will apply for the beginning of all exam periods. Students within this grace

A 94-100	C 74-76.9	period will be
A- 90-93.9	C- 70-73.9	allowed to extend
B+ 87-89.9	D+ 67-69.9	their exam time
B 84-86.9	D 64-66.9	by a maximum of
B- 80-83.9	D- 60-63.9	ten minutes into
C+ 77-79.9	F 59.9 and below	the break period
		but will then be
		required to return

to the seminar. After ten minutes have expired, students will be penalized 10 points for arriving late for an exam (students arriving late beyond 10 minutes without a legitimate excuse will nevertheless only have the remaining time of the entire 60 minutes to take the exam. Absences or late arrivals for exams will only be excused for participation in formally sanctioned University events, or extraordinary events if they are accompanied by sufficient (i.e. Health Services Excuse Forms) documentation within **two** calendar days of the absence or late arrival. The instructor reserves the right to determine what constitutes an extraordinary circumstance as well as what shall be considered “sufficient documentation.” If they have been excused for their absence, students will have **five** working days to make up a missed exam. If there are extraordinary circumstances, which would prevent the student from making up the exam in five working days, the instructor must be informed of this fact prior to the expiration of the five day period. The instructor reserves the right to administer makeup exams of any format (multiple choice, short answer, essay), which may not necessarily correspond to the original exam’s format. If a student misses an exam and does not have an excused absence, the student will receive a zero for the exam.

Assignment of Letter Grades

Final course letter grades will be assigned based upon the scales shown below:

Incomplete Grades

No incomplete grades will be given unless there is an agreement between the instructor and the student PRIOR TO the end of the course. The instructor retains the right to determine legitimate reasons for an incomplete grade.

Academic Dishonesty

All course work by students is to be done on an individual basis unless the instructor clearly states that an alternative is acceptable. Any reference materials used in the preparation of any assignment must be explicitly and properly cited. Students are responsible for policing themselves with respect to plagiarism. Any student engaging in academic dishonesty (plagiarism, cheating, academic misrepresentation, etc.) will receive a zero for the relevant assignment and will be reported to the proper university officials for further action. Students are expected to uphold the Academic Honor Code published in The Florida State University Bulletin and the Student Handbook. The Academic Honor System of The Florida State University is based on the premise that each student has the responsibility (1) to uphold the highest standards of academic integrity in the student's own work, (2) to refuse to tolerate violations of academic integrity in the university community, and (3) to foster a high sense of integrity and social responsibility on the part of the university community.

Students with Disabilities

If you anticipate needing any type of an academic accommodation in this course or have questions about physical access, please discuss this with the instructor within the first week of class. Students with disabilities needing academic accommodations should:

1. Register with and provide documentation to the Student Disability Resource Center (SDRC)
2. Bring a letter to the instructor from the SDRC indicating you need academic accommodations. This

should be done within the first week of class.

This syllabus and other class materials are available in alternative format upon request. If a student's accommodations change during the semester, the student will present an updated official letter from the SDRC outlining the specific modifications.

Course Schedule

Sept. 1 Class 1 Algebra Review

Assignment: Read M&S Chapter 1&2, and complete Exercises.

Sept. 8 Class 2 Introduction/Sets

Assignment: Read M&S Chapter 3, and complete Exercises.

Sept. 15 Class 3 Functions, Relations, and Utility

Assignment: Read M&S Chapter 4, and complete Exercises.

Sept. 22 Class 4 Limits and Continuity, Sequences and Series

Sept. 29 Class 5 Exam

Exam #1 All material through Class 4

Oct. 6 Class 6 Derivatives

Assignment: Read M&S Chapter 5, and complete Exercises.

October 13 Class 7 Derivatives II

Assignment: Read M&S Chapter 6, and complete Exercises

October 20 Class 8 Extrema

Assignment: Read M&S Chapter 8 and complete Exercises

October 27 Class 9 Integrals

Assignment: Read M&S Chapter 7 and complete Exercises

Nov 3 Exam

Exam #2 All material from Class 6-9

Nov 10 Class 10 Linear Algebra

Assignment: Read M&S Chapter 12 and 13, and complete Exercises

November 17 Class 17 Linear/Matrix Algebra II

Assignment: Read M&S Chapter 13 and 14, and complete Exercises

November 24 No Class

Thanksgiving Break

December 1 Class 12 Multidimensional Calculus/Optimization

Assignment: Read M&S Chapter 15 and complete Exercises

December 8 Class 13 Constrained Multidimensional Calculus/Optimization/Conclusion

Assignment: Read M&S Chapter 16 and complete Exercises; Review; Course Evaluations

December 15 Final Exam