MATH 1340 — Mathematics and Politics (Summer 2015)

Instructor:	Iian Smythe 112 Malott Hall ismythe@math.cornell.edu www.math.cornell.edu/~ismythe/		
Office hours:	M 1:00pm–3:00pm, Th 2:00pm–3:00pm in 112 Malott (or by appointment)		
TA & grader:	Sergio Da Silva smd322@cornell.edu		
Office hours:	W 10:00am–11:00am in 218 Malott (or by appointment)		
Time/place:	MTWThF 11:30am–12:45pm in 224 Malott Hall		
Textbook (req.):	E. A. Robinson Jr. and D. H. Ullman, A Mathematical Look at Politics. Chapman & Hall, 2011.		
Section website:	www.math.cornell.edu/~ismythe/S15_1340.html		
Course description:	We will apply mathematical reasoning to various problems arising in the social sciences. Our first focus will be an analysis of election procedures, in both two and multi-candidate elections. We will then turn to game theory, analyzing strategies for different kinds of two player non-cooperative games. Other topics will be discussed as time allows. The only prerequisites for our course are basic arithmetical skills (e.g., fractions), the ability to reason critically, and an eagerness to learn.		
Course outline:	Voting and social choice: Two candidate elections, multi-candidate elections, social choice functions, criteria, Arrow's theorem (2.5 weeks) Game theory: Zero-sum games, pure strategies, probability and mixed strate- gies, Nash equilibria, The Prisoner's Dilemma (3 weeks) Other: Apportionment, the Electoral College, gerrymandering		
Evaluation:	Evaluation of student performance and letter grade assignments (students taking the course S/U should discuss evaluation options with the instructor as soon as possible) will be based on the following breakdown:Homework 40% Test 1 (tentatively July 7) 25% Test 2 (August 3) 25% Class participation 10%		

Homework:	 Homework problems will be assigned each Tuesday (due on Friday, in class), and each Friday (due the following Tuesday, in class), with the exceptions for the Independence Day holiday, and the final problem set. Late homework will not be accepted without prior permission from the instructor. Your two lowest scoring homework assignments will be dropped from your final grade. Submitted homework should be on 8 1/2" by 11", or similar, paper, with your full name written near the top of the front page. All pages must be stapled together (please!). Writing should be legible and in pencil or dark ink. It is not necessary to type solutions (nor is it recommended). Solutions should be written clearly, with work shown. If the grader cannot read a solution, it will not be worth full credit. Partial solutions to problems will be accepted, and will be worth partial credit. You are welcome to work with other students on homework, but it is recommended that you try to work out a problem on your own first. In any case, solutions must be written in your own words. 		
Tests:	Test 1 will cover voting and social choice, and will be held in class (tentatively scheduled for Tuesday, July 7). Test 2 will cover game theory and will be held after classes end, on Monday, August 3 at 1:30pm in 224 Malott Hall. If there is any chance you will miss a test, you must contact the instructor as far in advance as possible to make arrangements.		
Participation:	Your participation grade will be based on your willingness to ask questions, make comments, and answer questions during class and in office hours. Par- ticipation two or more times a week is all that is required to get full credit.		
Important dates:	Monday, June 22 Tuesday, June 30 Friday, July 3 Tuesday, July 7 Friday, July 10 Friday, July 31 Monday, August 3 For more information	Classes begin Deadline to add a course (with extra fee) No classes (Independence Day) Test 1 (tentative) Deadline to drop or withdraw from a course Last day of classes Test 2 (1:30pm in 224 Malott Hall) n on Summer Session at Cornell, including the calendar,	

courses, and academic integrity, see www.sce.cornell.edu/ss/index.php