PS 681: INTERMEDIATE GAME THEORY. WINTER 2015

Arthur Lupia & Jason Davis

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Class Time: Tuesday & Thursday 10:00-11:30. Room: 1006 Dana
Section Time: Wednesday 12-1. Room: LSA 3156.

Office Hours: Lupia: Tuesday 2-4, 6757 Haven Hall.
Davis: Davis: Wednesday 3-5 PM, 7730 Haven Hall.

Primary Texts

Description
The purpose of this course is to train students to apply game theoretic methods to political science problems. Skill development will be evaluated through a series of problem sets and exams. Questions of research design and application will be addressed. Throughout the course, we will hold article-based workshops where we will use papers that I have written as a basis for discussions of how to (and how not to) integrate models into research designs. The main premise of this class is that you will learn more about game theory by doing it rather than simply reading about it. Students wishing to integrate game-theoretic research designs into their own research can use this course as a basis for fully engaging in the department's new advanced offerings in formal modeling.

Prerequisite. Political Science 598 or equivalent background is a prerequisite. Please review the mathematical appendices in both of the primary texts and be sure that you have a good working knowledge of the concepts contained in these appendices.

(Underlined classes occur during section time.).

1/7 INTRODUCTION and EXPECTATIONS
Week 1: First Class held during Section Time. No Class on January 8.
- RAS pp. 1-7.

1/13 THE THEORY OF CHOICE. MM Ch 1 and 2 (pp. 1-25).
1/15  CHOICE UNDER UNCERTAINTY  MM Ch 3 (pp. 27-62).

1/20  SOCIAL CHOICE THEORY  MM Ch 4 (pp. 66-85).


1/27, 29  NORMAL FORM GAMES  RAS Ch 1-1.4 (pp. 9-31)

2/3, 5  NORMAL FORM BAYESIAN GAMES  MM Ch 6 (pp. 150-69)

2/10, 11, 17  EXTENSIVE FORM GAMES  RAS Ch 4 (pp. 108-127)


2/26  MIDTERM EXAM

BREAK

3/10-12  DYNAMIC INC INFO GAMES  RAS Ch 2, 6.1, 6.2, 7.1 (pp. 40-69, 156-164, 181-184)


3/19  REPEATED GAMES  MM Ch 9 (pp. 251-73) RAS Ch 5:1-3 (pp. 128-137)

3/24  BARGAINING THEORY  MM Ch 10 (pp. 275-318) RAS Ch 12:1-5 (pp. 357-369)


4/14, 15, 21 Student model proposals

GRADING.

- Problem Sets: 9 @ 5 points each.
  - Due at 5:00 pm one week after MM Chapter 2 is completed in class
  - MM 2:1-3;
  - Exercise 2.1 (alternate wording): Suppose that X is finite and R is a complete and reflexive binary relation on X. Prove that in this case, M(R,S) is not empty if and only if R is acyclic.
  - Due At 5:00pm one week after MM Chapter 3 is completed in class
  - 3:1,4,5 (focus on the two-period case)
  - Due At 5:00pm one week after MM Chapter 4 is completed in class
  - 4:1,4,5,7;
  - Due At 5:00pm one week after RAS Chapter 1 is completed in class
  - 1:2-12 (even)
  - Due At 5:00pm one week after MM Chapter 6 is completed in class
  - 6:1-5
  - Due At 5:00pm one week after RAS Chapter 4 is completed in class
  - 4:2,4
  - Due At 5:00pm one week after RAS Chapter 2 is completed in class
  - 2:2-8 (even)
  - Due At 5:00pm one week after RAS Chapter 5 is completed in class
  - 5: 2-8 (even)
  - Due At 5:00pm one week after RAS Chapter 12 is completed in class
  - 12:2-8

- Article Workshop* 10 @ 2 points each.
  - For each workshop, you must produce a report of 250-500 words that
    - Makes an attempt to explain the logic of one or more proofs AND/OR Makes an attempt to motivate an extension or alteration of the model that allows it to better serve a specific substantive purpose. This purpose may be the purpose stated by the paper's author or it may be an alternate purpose that you come up with.
    - The report is due at 24 hours prior to the beginning of class during which the article is being discussed. No extensions will be granted and reports submitted after this time will receive a grade of zero.
    - I will integrate the content of these reports into class discussions.

- Paper proposal: 5 points. Submit a 3-5 page prospectus on how you can use formal logic to advance a debate on a literature about which you care. You will have five minutes to present this idea to the class. Each presentation will be followed by a brief Q&A

- Midterm: 15 points.
- Final Exam: 15 points.