

Introduction to Strategic Behavior

ECON 411

Sérgio O. Parreiras

Department of Economics
University of North Carolina

Fall, 2020



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

1 Syllabus

- Goals
- Coverage
- Class
- Contact Information
- Exam Dates and Grading Policy
- First Week To Do List
- Class Discussion
- Problem Sets





Course Objectives

The course main goal is to provide tools to enable you to:

- 1 build models of strategic behavior,
- 2 identify their (built-in) limitations and
- 3 think about how to apply them to real-life problems;



On Exactitude in Science

Jorge Luis Borges, *Collected Fictions*, translated by Andrew Hurley.

“In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography. Suarez Miranda, *Viajes de varones prudentes*, Libro IV, Cap. XLV, Lerida, 1658.”



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Mont Sainte Victoire

Photography vs Cézanne



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Reaching Our Goals

To achieve our goals, we rely on:

- 1 Class discussion.
- 2 Problem solving practices.
- 3 Reading and discussion of real-life cases



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Recommended Textbook

Osborne, Martin J. (2004)

An Introduction to Game Theory, Oxford University Press.

This is an excellent textbook, which is also used in ECON 511.

Although it is **not required**, it provides a very nice companion to our course and is a great reference source.



Tentative Coverage

- 1 Strategic Games
- 2 Solution Concepts: Nash Equilibrium
- 3 Dominance concepts
- 4 Solution Concepts: Iterative deletion
- 5 Symmetric and Zero-Sum games
- 6 Pareto Efficiency
- 7 Expected Utility (review)
- 8 Mixed Strategy Nash Equilibrium
- 9 Extensive games of perfect information
- 10 Solution Concept: Subgame Perfection
- 11 Simultaneous moves and uncertainty
- 12 Extensive Games: Repeated Games
- 13 Games with Imperfect Information
- 14 Solution Concepts: Perfect Bayesian Equilibrium
- 15 Mechanism Design

Class Information and policies

- We meet online Tuesdays and Thursdays, from 3:00 pm to 4:15 pm. Please, see Sakai > Announcements for the ZOOM links.
- Please install Mathematica in the computer or laptop you intend to use with ZOOM so you can share your screen/work. Avoid using a tablet/ipad for the ZOOM calls.
- Sakai will be used to schedule office hours meetings, post grades, course announcements, readings, supplementary materials, messaging, problem sets, class ZOOM links, etc...
- This course requires synchronous participation through Zoom. You need to be in front of your computer during the designated class time and be able to interact with your instructor and classmates. Please, turn your camera and microphone on during class because you need to be visible and audible to your instructor and your classmates during class.

Contact Info and Office Hours

- ① Email: sergiop@unc.edu.
- ② Please send messages thru Sakai.
- ③ Office hours (OH) are by Sakai appointment only. Registration opens a week before and closes a day before the OH meeting.
 - Wednesday: 3 pm – 4 pm, Friday: 11 am – 12 pm.
 - To schedule an OH meeting use Sakai > sign-up.
 - Do not hesitate to message me to schedule meetings **outside** regular OH if your schedule conflicts with the regular OH.

Evaluation

- **September 8th** — 1st Midterm
- **October 27th** — 2nd Midterm
- , **TBA by the Registrar** — Final Examination
- Midterm grades account for 35% of the final grade.
- Final examination grade is worth 45% of the final grade.
- Ten or more problem sets and/or writing assignments: 20%.
- There are no make-ups for midterms.
- The weight of a missing midterm (with justification) is transferred towards the final exam.

Computing Grades

- Exam grades are converted into scores accordingly to:

$$\text{Score} = \text{Exam Grade} + 100 - \max(\text{Top Exam Grade}, 50).$$

- Assignments scores are identical to assignment grades.
- Course grades are computed accordingly to the table:

| letter grade | min. score |
|--------------|------------|
| A | 95 |
| A- | 90 |
| B+ | 87 |
| B | 83 |
| B- | 80 |
| C+ | 77 |
| C | 73 |
| C- | 70 |
| D+ | 67 |
| D | 63 |
| F | 50 |

To do list for the first week

- 1 If you are eligible for taking exams with ARS, please schedule with them within the first or second week of classes and notify me.
- 2 If a) you have more than 3 final exams in more than 24 hours; b) ECON411 is one of these exams; and c) you wish to re-schedule one of your exams; then you **MUST** ask for an alternative date before September 10th. If you do not follow these procedures your request will not be accommodated.
- 3 Place an order for the software *Mathematica* throughout software.sites.unc.edu/software/mathematica/. The *student license is free*. However, you must place an order.

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Class Discussion

During this course, we shall employ additional material from TV, movies, or literature to discuss strategic related issues.

Sometimes, you may find the political or religious views; or the profanity contained in the additional material offensive or objectionable and you may feel uncomfortable.

I **do not** endorse any particular views ex but ...

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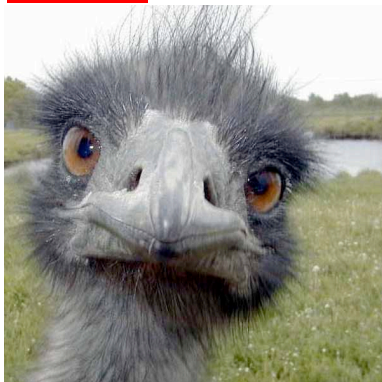
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Class Discussion

I believe that as part of your **university** education, it is important you



engage in **critical thinking**,
and also respect different opinions expressed by your classmates.

Problem Sets (PS)

- 1 PS are posted on Sakai > Assignments.
- 2 Past due date PS are not accepted.
- 3 PS are assigned to groups (max. size = 3).
- 4 Groups are randomly formed for each PS.
- 5 PS grading criteria:

| grade | solutions | work | presentation |
|-------|---------------|-----------|--------------|
| 4.0 | correct | explained | reasonable |
| 3.5 | comput. err. | explained | reasonable |
| 3.0 | concept. err. | explained | reasonable |
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