University of California, Davis -- Department of Economics

ECN/ARE 200C: Microeconomic Theory

SPRING 2025

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Classes: Tuesday and Thursday, 12:10 - 1:30 pm, OLSON 147

Office hours: Wednesday, 10:30 am – 12:00 pm and 1:00 - 2:30 pm

Midterm Exam: Thursday, May 8

Final Exam: Thursday, June 12, 1:00-3:00pm

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Syllabus

Please note: You are expected to be familiar with the **UC Davis Code of Academic Conduct** (http://sja.ucdavis.edu/files/cac.pdf). Any suspected violation will be reported to Student Judicial Affairs.

Class web page: http://www.econ.ucdavis.edu/faculty/bonanno/teaching/200C/ . The web page contains a link to the textbooks, homework problems, practice problems with answers, past exams with answers, lecture notes, etc.

Textbooks:

(1) *Game Theory* by Giacomo Bonanno. This is an Open Access textbook (thus free to download) that includes 190 exercises with detailed answers; a printed version (split into two volumes) is also available. **The link to the textbook is on the web page for this class.** It is essential that you go through the exercises associated with the sections of the book that are covered in class. Exam questions will be similar in format to the exercises in the book.

(2) *Uncertainty, Risk and Information* by Giacomo Bonanno. This is an Open Access textbook (thus free to download) that includes 150 exercises with detailed answers; a printed version is also available. **The link to the textbook is on the web page for this class.** It is essential that you go through the exercises associated with the sections of the book that are covered in class. Exam questions will be similar in format to the exercises in the book.

(3) Additional resource (not required): A. Mas-Colell, M. Whinston and J. Green, *Microeconomic theory*, OUP, 1995.

Homework: There will be 7 homework problems, *due every Friday, starting from April 11* (we will skip May 9 because of the Midterm). Homework is graded as follows: (0) Not submitted: 0 points; (1) Submitted but fail: 1 point; (2) Barely Passing: 2 points; (3) Pass: 3 points; (4) Good: 4 points; (5) Excellent (no mistakes): 5 points. **The homework can be downloaded from the web page.** Although the homework will not be thoroughly graded, it is extremely important (i.e. good preparation for the exams) to do the homework seriously, reviewing the relevant chapters of the textbooks before solving the exercises, and trying to have either the TA or me unblock the situation if you are stuck on a problem. *I recommend that, at least in your first attempt, you work individually rather than in groups.* Detailed answers will be posted on the web page; you should compare them with your answers and make sure that you understand any discrepancies. The homework must be submitted as a PDF online through the Canvas assignment link.

Exams: there will be one Midterm exam and a Final exam, both in class. The dates are given above.

Grading will be based on the following weights: 15% on the homework, 40% on the Midterm and 45% on the Final.

Topics covered

(GTB = Game Theory Book, **URI** = Uncertainty, Risk and Information book**)**

1. **Strategic-form games with ordinal payoffs.** Frames and games, dominance, Nash equilibrium.
   Reading: Chapter 2 of GTB.
   Practice problems: all the practice problems in Chapter 2 of GTB.

2. **Applications to imperfect competition**. Cournot oligopoly. Perfect competition as a limit case. Bertrand's paradox. Hotelling's model of product differentiation. Cournot competition compared to Bertrand competition when products are differentiated.
   Reading: The following files on the web page: Cournot.pdf, toomany.pdf, Hotelling.pdf.
   (Optional additional reading: Mas-Colell *et al*, Chapter 12, pp. 387-400.)
   Practice problems on the web page**:** practice_7.pdf, practice_8.pdf.

3. **Dynamic games with ordinal payoffs: (1) Perfect information.** Perfect-information games. Strategies. Backward induction. Applications to imperfect competition (Stackelberg games).
   Reading: Chapter 3 of GTB.
   Practice problems: all the practice problems in Chapter 3 of GTB.

4. **Dynamic games with ordinal payoffs: (2) Imperfect information.** Subgame perfect equilibrium. Applications to imperfect competition: endogenous product differentiation, Hotelling's mistake, strategic entry deterrence.
   Reading: Chapter 4 of GTB. (Optional reading: Mas-Colell *et al*, Chapter 12, pp. 414-417).
   Practice problems on the web page**:** practice_11.pdf.

5. **Expected utility theory. Games with cardinal payoffs.** Mixed-strategy Nash equilibria, behavioral strategies in extensive-form games, subgame-perfect equilibrium revisited.
   Reading: Chapters 5, 6 and 7 of GTB.
   Practice problems: all the practice problems in Chapters 5, 6 and 7 of GTB.

6. **Insurance.** The demand for, and the supply of, insurance.
   Reading: Chapters 2 and 5 of URI.
   Practice problems: all the practice problems in Chapters 2, 4 and 5 of URI.

7. **Asymmetric information.** Adverse selection.
   Reading: Chapters 7 and 8 of URI.
   Practice problems: practice problems in Chapters 7 and 8 of URI.

8. **Signaling. Price discrimination through bundling.**
   Reading: Chapter 9 of URI and the following file on the web page: 2nd_degree.pdf.
   Practice problems: practice problems in Chapter 9 of URI and on the web page**:** practice_17.pdf.

9. **Games with incomplete information.**
   Reading: Chapters 14 and 15 of GTB.
   Practice problems: all the practice problems in Chapters 14 and 15 of GTB.

10. **Weak sequential equilibrium.**
    Reading: Chapter 11 of GTB.
    Practice problems: all the practice problems in Chapter 11 of GTB.