Brown University

Economics 2050, Microeconomics I

Fall 2022

Professors: Roberto Serrano and Pedro Dal Bó
Teaching Assistant: Ricardo Fonseca

Lectures: Mondays and Wednesdays, 10:30 - 11:50 a.m., Robinson Hall 301, in-person
T.A. sections: TBA

Office Hours:

Serrano, Tuesdays 9 - 11, Robinson 201B

Dal Bó, Monday 3-4pm (English), Tuesday 11am-12pm (Spanish), Robinson Hall 302B

Teaching Assistant, TBA

General References

The primary reference is:

Mas-Colell, A., M. Whinston and J. Green (1995), *Microeconomic Theory*, Oxford University Press, Oxford.

An alternative, more compressed, reference is:

Jehle, G. and P. Reny (1998), *Advanced Microeconomic Theory*, Addison-Wesley, Reading, MA.

Another classic reference for the first part of the course is:

Varian, H. (1982), *Microeconomic Analysis*, 2nd edition, Norton, New York.

Other references for the second part of the course are:

Fudenberg, D. and J. Tirole. (1991), *Game Theory*, MIT Press, Cambridge.

Osborne, M.J. and A. Rubinstein. (1994), *A Course in Game Theory*, MIT Press, Cambridge.

A couple of articles of general interest in microeconomic theory, relevant for the two-course sequence:

Debreu, G. (1986), Theoretical Models: Mathematical Form and Economic Content, *Econometrica*, 54, 1259–1270.

Maskin, E. (2019), The Economics of Kenneth J. Arrow, *Annual Review of Economics*, 11.

Undergraduates: If you are an undergraduate student considering taking this class, please talk to the instructors before the semester begins in order to discuss the specifics of your case. If your Brown undergraduate financial aid package includes the Book/Course Material Support Pilot Program (BCMS), concerns or questions about the cost of books and course materials for this or any other Brown course (including RISD courses via cross-registration) can be addressed to bcms@brown.edu. For all other concerns related to non-tuition course-related expenses, whether or not your Brown undergraduate financial aid package includes BCMS, please visit the Academic Emergency Fund in E-GAP (within the umbrella of "E-Gap Funds" in UFunds) to determine options for financing these costs, while ensuring your privacy.

Academic integrity: We expect you to uphold the highest standards in terms of academic integrity. We take cheating on assignments or exams very seriously.

Special accommodations: Brown University is committed to full inclusion of all students. Please inform us early in the term if you may require accommodations or modification of any course procedure. You may speak with us after class, during office hours, or by appointment. If you need special accommodations, please be sure to reach out to Student Accessibility Services (SAS) for their assistance (sas@brown.edu, 401-863-9588). We want to make sure that every student is included and given full access and opportunity in the course.

Diversity and inclusion: this course welcomes all students, regardless of their race, gender, religion, or ideology. Again, we want to make sure that the course provides a welcoming and friendly environment to everyone.

Estimates of time allocation: The following is an estimate of the time allocation required for the course. Needless to say, following these estimates is neither necessary nor sufficient to do well in the course. That is, there will be students able to master the material perfectly with fewer hours, while on the other hand, arguing to the instructors that one has spent the suggested hours on the course will not be a consideration to determine the final grade. With these caveats, here are the estimates. Over 12 weeks, students will

spend 3 hours per week in class (36 hours total), and 1 hour per week in discussion section (12 hours). Homework, reading, and studying will take approximately 10 hours per week (120 hours total). In addition, there are two estimated 1.5-hour exams for which approximately 15 hours of review –5 hours for each of 3 days– is assumed.

Evaluation:

Homework: 20%

Exam 1, in class, Monday, October 24, 40%

Exam 2, Thursday, December 15, 9-10:30am, 40%

Homework will usually be assigned every week and discussed in section the following week. The value of working on homework will far exceed its direct effect of 20% on the final grade. Also, to clear the first-year requirement in the Ph.D. program, a student must earn at least a grade of B in the course.

Syllabus

Part 1. (Serrano) Classical Consumer and Producer Theories (Mas-Colell et al.'s Chapters 2-5):

Choice-based consumer theory and the weak axiom of revealed preference.

Preference-based consumer theory and utility.

Duality.

Elements of bounded rationality.

Aggregation.

Producer theory.

Part 2 (Dal Bó). Decisions under Uncertainty and Game Theory (Mas-Colell et al.'s Chapters 6-9):

Decisions under Uncertainty.

Simultaneous-move games.

Sequential-move games.

List of Topics in each Lecture

Serrano's lectures (Wednesday September 7 - Wednesday October 19 – 12 lectures):

Class 1: Choice-based consumer theory. Commodities. The consumption set. Properties of consumption sets. The budget set. The ordinary or Walrasian demand correspondence and its basic properties.

Class 2: Comparative statics of demand. Wealth and price effects. The matrix of price effects. Restrictions on wealth and price effects: Euler's condition, Engel and Cournot aggregation conditions. The weak axiom of revealed preference (WARP).

Class 3: Implications of WARP. The compensated law of demand. Substitution effects. Differentiable version of the compensated law of demand: the negative semidefiniteness of the Slutsky matrix and the Slutsky equation. Is the Slutsky matrix symmetric? The singularity of the Slutsky matrix. WARP and preference maximization.

Class 4: Classical preference-based demand theory. The preference relation and its properties. Completeness, transitivity, desirability and convexity properties.

Class 5: Utility representation of preferences. Continuous preference relations and representability.

Class 6: The utility maximization problem and its solution. Walrasian or ordinary demand correspondence. Properties of the demand correspondence. The indirect utility function. Properties of the indirect utility function.

Class 7: The expenditure minimization problem and its solution. The expenditure function. Properties of the expenditure function. Relationship between the expenditure and the indirect utility functions.

Class 8: The Hicksian or compensated demand correspondence. Properties of the compensated demand. Hicksian demand and the compensated law of demand. The Slutsky matrix when derived from preference maximization. Substitution effects revisited. The negative semidefiniteness, symmetry and singularity of the Slutsky substitution matrix. Relation between Walrasian demand and the indirect utility function: Roy's identity. Slutsky norms: the Slutsky matrix and bounded rationality.

Class 9: Integrability. Recovering the expenditure function from demand. Recovering preferences from the expenditure function. The strong axiom of revealed preference (SARP). New characterizations of rationality and connections with bounded rationality.

Class 10: Aggregate demand. Aggregate demand as a function of aggregate wealth. Linear wealth expansion paths and Gorman forms. WARP in the aggregate. Price independence of wealth levels and the uncompensated law of demand. The representative consumer assumption.

Class 11: Producer theory. Production sets and their properties. The profit maximization problem. The supply correspondence and the profit function. The single output case: production function and conditions for profit maximization. Properties of supply and profit functions (homogeneity, convexity, Hotelling's lemma). The positive semidefiniteness of the matrix of price effects as an expression of the law of supply. Symmetry and singularity of the matrix of price effects.

Class 12: The cost minimization problem. Conditional input demands, the cost function and its properties (homogeneity, concavity, Shephard's lemma). Aggregation in the theory of the producer.

Some additional references to recent papers will be provided along the way in several lectures.

Exam 1: Monday, October 24.

Dal Bó's lectures (Wednesday October 26 - Wednesday December 7, 12 lectures):

Class schedule to be determined.

Exam 2: 9 - 10:30 a.m. Thursday, December 15