CS/SS/Ec 149 Introduction to Algorithmic Economics

- **Instructors:** Federico Echenique and Luciano Pomatto
  Lectures: MWF 10-11am
  Location: 125 Baxter.
  Class homepage: http://www.hss.caltech.edu/~fede/csssec149/

  You may also find the following useful: “Game Theory,” by M. Maschler, E. Solan, S. Zamir (Cambridge University Press, 2013), and “Algorithmic Game Theory” by Noam Nisan, Tim Roughgarden, Eva Tardós, and Vijay Vazirani (Cambridge University Press, 2007).

- **Grading.** There will be one midterm and one final exam. The midterm covers the first half of the course material, and the final the second half. Each of the tests is worth 40% of the grade. There will also be weekly or bi-weekly homework, in all counting for 20% of the grade. To receive a passing grade, students must attempt and hand in all the homework, and obtain at least 10% of the points in the midterm and in the final.

- **Course Outline.**
  1. Fundamentals: Strategic-form games, mixed strategies, dominance and iterated dominance, applications to price competition and second-price auctions.
  2. Games and Solutions: Nash Equilibrium (existence, properties and interpretation), correlated Equilibrium, min-max and zero-sum games, linear programming.
4. Incomplete Information: Harsanyi’s insight, Bayesian Nash equilibrium, knowledge and common knowledge, coordination, second price and Vickrey auction.

5. Mechanism design: Implementation and the revelation principle.


10. Communication complexity of economic mechanism.
