

## MKTG 955 – Analytical Models in Marketing Part B

### Time:

Tuesday, 3:30pm – 6:30pm (Except when noted).

### Location:

Canvas + BlueJeans

### Team:

Instructor: Ron Berman, [ronber@wharton.upenn.edu](mailto:ronber@wharton.upenn.edu)

### Description:

The goal of the course is to introduce students to advanced analytical methods and models used in the Economics and Marketing literature.

The focus of the course will be primarily on topics that apply to research of “online” markets and competition and as such may yield testable hypotheses in existing (online) data. A secondary focus is a methodological focus introducing students to research using specific approaches and techniques in each session.

Students from non-marketing disciplines will benefit from this course through exposure to applied and recent research that uses economic theory. In addition, we will discuss open problems that may be applicable to the student’s work.

In each session, we will cover 3-4 research papers (and some book chapters).

### Requirements:

A student taking the course should have good knowledge of game theory. Good knowledge of classic industrial organization topics can be beneficial.

### Assessment:

1. Presentation: In each session one student will present a 45 minute presentation about a paper.
2. Paper Summary: Non-presenting students need to submit (by email) a summary of one of the papers in the required reading list.
3. Assignment, Exam: The course will have a written assignment and a final exam.
4. Grading: Presentations/summary: 20%, Assignment: 40%, final Exam 40%.

### Readings:

Papers marked with an asterisk (\*) are required reading for each session.

### Live Online Lectures:

1. We will meet once weekly for 3 hours using BlueJeans.
2. Presenting will be done by screen sharing slides.
3. Live math will be done using Mathematica. You can prepare the code before the lecture. Please make sure to have Mathematica installed/available before the first lecture. If you need more info, see here: <https://support.wharton.upenn.edu/help/201366415-math-software-matlab-and-mathematica>

### Textbook:

- 1) [EK] Easley, D. and Kleinberg, J., 2010. *Networks, crowds, and markets: Reasoning about a highly connected world*. Cambridge University Press.  
Available at: <https://www.cs.cornell.edu/home/kleinber/networks-book/>

### Sessions:

- 1) Consumer Search & Product Design (Mar 24)
  - a) Diamond, P.A., 1971. A model of price adjustment. *Journal of economic theory*, 3(2), pp.156-168.
  - b) \* Weitzman, M.L., 1979. Optimal search for the best alternative. *Econometrica: Journal of the Econometric Society*, pp.641-654.
  - c) \* Stahl, D. O. 1989. Oligopolistic pricing with sequential consumer search. *The American Economic Review*, 700-712.
  - d) \* Kuksov, D., 2004. Buyer search costs and endogenous product design. *Marketing Science*, 23(4), pp.490-499.
  - e) Armstrong, M., Vickers, J. and Zhou, J., 2009. Prominence and consumer search. *The RAND Journal of Economics*, 40(2), pp.209-233.
- 2) Learning, Herding & Word of Mouth (Mar 31)
  - a) \* Observational Learning – EK Sections 16.5 – 16.6
  - b) \* Zhang, J., 2010. The sound of silence: Observational learning in the US kidney market. *Marketing Science*, 29(2), pp.315-335.
  - c) \* Mayzlin, D., 2006. Promotional chat on the Internet. *Marketing Science*, 25(2), pp.155-163.
  - d) Sayedi, A., 2018. Pricing in a Duopoly with Observational Learning.
- 3) Signaling and Cheap Talk (Apr 7)
  - a) Milgrom, P. and Roberts, J., 1986. Price and advertising signals of product quality. *The Journal of Political Economy*, pp.796-821.

- b) \* Mayzlin, D. and Shin, J., 2011. Uninformative advertising as an invitation to search. *Marketing Science*, 30(4), pp.666-685.
  - c) \* Crawford, V.P. and Sobel, J., 1982. Strategic information transmission. *Econometrica: Journal of the Econometric Society*, pp.1431-1451.
  - d) \* Pavlov, V., Berman, R., 2019. Price Manipulation in Peer to Peer Markets.
- 4) Networks (Macro) (Apr 14)
- a) \* Economides, N., and Charles P. Himmelberg. "Critical mass and network size with application to the US fax market." (1995).
  - b) \* EK Ch. 17
  - c) \* Armstrong, Mark. "Competition in two-sided markets." *The RAND Journal of Economics* 37.3 (2006): 668-691.
  - d) Chatterjee, P., and Zhou B., 2017. Sponsored Content Advertising in a Two-sided Market.
- 5) Networks (Micro) (Apr 21)
- a) EK Ch. 2, 3
  - b) \* Galeotti, Andrea, and Sanjeev Goyal. "The law of the few." *The American Economic Review* 100.4 (2010): 1468-1492.
  - c) Katona, Zsolt, Peter Pal Zubcsek, and Miklos Sarvary. "Network effects and personal influences: The diffusion of an online social network." *Journal of marketing research* 48.3 (2011): 425-443.
  - d) \* Kempe, David, Jon Kleinberg, and Éva Tardos. "Maximizing the spread of influence through a social network." *Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining*. ACM, 2003.
  - e) \* Katona, Zsolt, and Miklos Sarvary. "Network formation and the structure of the commercial world wide web." *Marketing Science* 27.5 (2008): 764-778.
- 6) Externalities + Information Design (Apr 28)
- a) \* Holmstrom, B., 1982. Moral hazard in teams. *The Bell Journal of Economics*, pp.324-340.
  - b) \* Berman, R., 2015, "Beyond the Last Touch: Attribution in Online Advertising", *Working Paper*.

- c) Choi, W. J., & Sayedi, A. (2019). Learning in online advertising. *Marketing Science*, 38(4), 584-608.
- d) Kamenica, E., & Gentzkow, M. (2011). Bayesian persuasion. *American Economic Review*, 101(6), 2590-2615.
- e) \* Bergemann, D., & Morris, S. (2019). Information design: A unified perspective. *Journal of Economic Literature*, 57(1), 44-95.