

## Economics of Information Systems

Ever since the beginning of research into information systems, economics has been recognized as one of the most important reference disciplines. Economics has made useful contributions to the understanding of information systems. Some examples include the theory of information, decision analysis, game theory, and empirical-econometric methodologies. These help to understand the implementation, use, and management of information systems, such as the economics of network configurations, privacy, and IT's contribution to productivity. The objective of this course is to equip graduate students with economics methodologies pertaining to the analysis of IT/IS, and to help students understand emerging IS-economics issues.

### Prerequisites:

Basic knowledge in matrix algebra, probability, and statistics would be very helpful. Students should have strong interests in IS research that applies economics/mathematical modeling, and empirical-econometric analysis.

### Assessment:

Class participation	20%
Assignments	60%
Term paper	20%

### Textbooks and useful references:

- *Econometric Analysis*. William H. Greene, 5<sup>th</sup> edition, Prentice Hall.
- *The Theory of Industrial Organization*. Cambridge, Mass: MIT Press.
- *Game Theory for Applied Economists*. Robert Gibbons, Princeton University Press.

### Syllabus:

#### Part I: Basic econometrics (Week 1)

- Foundations for econometric analysis
- Least squares: theory and applications
- Generalized least squares
- Endogeneity and simultaneous equations
- Nonlinear least squares

#### Part II: Basic analytical tools, theory construction, and training

- The exercise of monopoly power (Week 1-2)
  - Monopoly
  - Product selection & quality
  - Price discrimination
- Strategic interaction (Week 2)
  - Competition with homogenous goods
  - Product differentiation
  - Advertising
  - Business strategy

Part III: Special topics (Lectures 5-10): 12 papers will be presented and discussed in details through interaction between the lecturer and students.

E-commerce (3 papers) (Week 3)

1. Smith, Michael and Rahul Telang, "Competing with Free: the Impact of Movie Broadcasts on DVD Sales and Internet Piracy." *MIS Quarterly*, 33(2), June 2009, pp. 321-338.
2. Tucker, Catherine, and Juanjuan Zhang. "How Does Popularity Information Affect Choices? A Field Experiment." *Management Science* 57(5) (2011) : 828-842.
3. Xie, Jinhong and Steven M. Shugan, "Electronic Tickets, Smart Cards, and Online Prepayments: When and How to Advance Sell". *Marketing Science*, 20(3), Summer 2001, pp. 219–243.

The economics of Piracy (1 paper) (Week 3)

4. Chen, Yeh-ning and Ivan Png, "Information Goods Pricing and Copyright Enforcement: Welfare Analysis." *Information Systems Research*, 14(1), March 2003, pp. 107-123.

The economics of Information Security (2 papers) (Week4)

5. Png, Ivan and Qiu-Hong Wang, "Information Security: Facilitating User Precautions Vis-à-Vis Enforcement Against Attackers." *Journal of Management Information Systems*, 26(2), Fall 2009, pp. 97–121.

Industrial organization (7 papers) (Week 4-5)

6. Varian, H.R. "A Model of Sales," *American Economic Review*, vol. 70, no. 4, September 1980, pp. 651-659.
7. Narasimhan, C. "Competitive Promotional Strategies," *Journal of Business*, vol. 61, no. 4, October 1988, pp. 427-449.
8. Baye, M.R., and J. Morgan "Information Gatekeepers on the Internet and the Competitiveness of Homogeneous Product Markets," *American Economic Review*, vol. 91, no. 3, June 2001, pp. 454-474.
9. Iyer, G. and A. Pazgal "Internet Shopping Agents: Virtual Colocation and Competition," *Marketing Science*, vol. 22, no. 1, winter 2003, pp. 85-97.
10. Hui, K.L. and I.P.L. Png "Piracy and the Legitimate Demand for Recorded Music," *Contributions to Economic Analysis and Policy*, vol. 2, no. 1, article 11.
11. Hui, K.L. and I.P.L. Png "On the Supply of Creative Work: Evidence from the Movies," *American Economic Review*, vol. 92, no. 2, May 2002, pp. 217-220.
12. Acquisti, A. and Varian, H.R. "Conditioning Prices on Purchase History," *Marketing Science*, vol. 24, no. 3, summer 2005, pp. 367-381.