This course analyzes the economics of social networks, such as Facebook and Twitter as well as other networks, such as the Internet, the telecommunications network, cable TV networks, banking networks, and credit card networks. We develop a general theory of platform competition, where the platform may be an operating system such as the iOS, Android, or Windows or a network such as Facebook. We examine how networks are formed from the perspective/incentives of users, the network (platform) operator, and the applications providers that are complementary to the network. We identify key features of networks including: (i) higher value to users from networks of larger size; (ii) very significant inequalities in market share, profits, and (often) prices; (iii) the extent of incentives for interoperability and interconnection between networks; and (iv) importance of key network nodes that are “central” or “influential” in the creation and stability of networks.

We discuss two-sided markets, where two sides/parties wish to interact, and their interactions must go through an intermediary/platform/network. Examples:

- Two sides: advertisers and readers. Intermediary: periodical, Yellow Pages, Internet search engine.
- Two sides: Internet message sender and receiver. Intermediary: Internet Service Provider(s).
- Two sides: consumers and merchants. Intermediary: payment network (e.g., Visa, MasterCard, American Express).
- Two sides: gamers and game designers. Intermediary: game-console manufacturer.

We observe that sometimes both sides pay (game-console manufacturers charge both gamers and game designers), sometimes there is a zero price to one side (Google doesn’t charge consumers but charges advertisers) and sometimes one side is subsidized (credit-card companies charge merchants, but often subsidize consumers with cash and bonus points or miles). We explain why charges vary across the types of examples above, and apply it to the current controversial issue the abolition of “network neutrality,” if telephone and cable companies are allowed to impose additional charges to originators of content on the Internet.

We will discuss network platforms of importance including (i) mobile “smart” phones such as iPhone and Android ones; (ii) audio and video distribution networks; (iii) digital books distribution networks; (iv) the PC operating systems market; and (v) the payments systems networks (credit cards) platforms. We will also discuss in detail the structure of the Internet, the Internet search and advertising markets/platforms and network neutrality.

**Requirements:** This course is intended for students who have completed the core Microeconomics course. Students are expected to participate in class. There will be an in-class midterm. Instead of a final, students will form groups and each group will write an original paper on a topic relevant to the course, subject to the instructor’s approval. Student groups are expected to make presentations on their topics two to three weeks before the end of classes. The papers will be submitted electronically at the last class.

**Invited Speakers**

- To be announced

**Readings.** There are no required textbooks. We will rely on class notes available to download. The following books will also be put on reserve at the library.
Carlton, Dennis, and Jeff Perloff, Modern Industrial Organization, Harper Collins.

Outline

1. Social Networks
   a. General features
      i. higher value to a user from a network of larger size – “network effects.”
      ii. very significant inequalities in market share, profits, and (often) prices; “winner takes most.”
      iii. critical mass; fast expansion of new networks compared with non-network innovations.
      iv. incentives for interoperability and interconnection between networks.
      v. importance of key network nodes that are “central” or “influential” in the creation and stability of networks.
   b. Network formation
      i. Benefits; costs.
      ii. Privacy issues (also see below).

Readings:

- Class notes.
- Network Economics Slides.
- Shapiro and Varian chapter 7.

2. Review of Economics in Non-Network Markets
   - Class notes.

3. General Networks; Platform Competition; Two-sided Markets
   a. General features.
   b. Monopoly/Dominant platforms.
c. Competing platforms
   i. Mobile “smart” phones: iOS, Android, Windows 7, Nokia, Pal
      ii. Incentives for incompatibility; Betamax vs. VHS; Blu-Ray vs. HD DVD; Windows vs. OS10 vs. Linux.
      iii. Incentives for compatibility; the agreement on the DVD format.

Readings:

- Class Notes.
- Shapiro and Varian, ch. 8-9.

4. The Internet

a. Basic Structure; Protocols; Functionality.

b. The Internet Backbone; pricing on the Internet.

c. Internet Service Providers on last mile residential service.

d. The issue of network neutrality.

e. The Internet search and advertising markets.

f. Cybersecurity; A driver’s license to access the Internet?

g. Privacy, anonymity. Market for privacy?

- Invited speaker: TBA

Readings:

- Class Notes.
- Easley and Kleinberg, ch. 13, 14, 15.

- Invited speaker: TBA

5. Credit Cards and Payment Systems Networks

a. Network Structure; Visa and MasterCard networks compared to the Amex and Discover networks.

b. Three-party networks (users, bank, merchants) vs. four-party networks (users, issuing bank, acquiring bank, merchants).

d. Government interventions: Australia, EU, USA.

Readings:

- Class Notes and PPT.
- US Department of Justice, Settlement with Visa and MasterCard; Suit against Amex.

6. The Audio and Video Distribution Markets

a. Competing audio platforms on PC; MP3, WMA, iTunes, RealAudio, etc.; competing video platforms (MPEG, AVI, WMV, FLV, etc.).

b. Piracy; Peer to peer; Napster and Torrent.

c. Distribution through downloads vs. through the old Netflix model.

d. EU suit against Microsoft for bundling Windows Media Player with Windows; settlement forced Microsoft to sell in Europe a version of Windows without Windows Media Player.

Readings:

- Class Notes.
- Stanford case study.

7. The Digital Books Market

a. Device-based distribution.

   i. Kindle, iPad, etc.

   ii. The role of formats.

   iii. Competition; pricing of devices; pricing of books; pricing by retailer vs. “agency model.”

b. Google books

   i. What it is; How it was done; Why Microsoft stopped doing it.

   ii. Benefits to Google from book scanning.

   iii. Settlement between Google and publishers rejected on antitrust grounds.

c. The long tail of the sales distribution of digital goods.

   - Class Notes.
   - DOJ suit against Apple and publishers on eBook pricing.
   - Google books settlement; District Court Decision rejecting settlement.

   - Invited Speaker: TBA
8. **Mobile Phone Platforms**
   
a. iPhone; Android; Windows 7.
   
b. Competition and pricing of OS, apps, carriers, handset manufacturer.
   
   **Readings:**
   
   - Class Notes.

9. **Application of Network Economics to the PC Industry**
   
   **US case**
   
a. Dominant market share of Microsoft in operating systems for PCs (over 90%).
   
b. US alleged monopolization of OS market, attempt to monopolize the market for browsers, and bundling of Internet Explorer with Windows.
   
c. Why is Microsoft selling Windows at a low price?
   
d. District Court finds Microsoft liable and orders breaking the company in two pieces.
   
e. Appeals Court keeps monopolization liability, reverses in all other respects.
   
f. US and Microsoft settle; settlement terms; role of States.
   
   **EU browsers’ case**
   
a. EU alleged illegal bundling of Internet Explorer with Windows.
   
b. Settlement forced Microsoft to help distribute rivals’ browsers.
   
   **Readings:**
   
   - Presentation on the Microsoft antitrust cases
   - [The Microsoft Antitrust Case For MBA Students](#)
   - NYU conference on US v. MS, including streaming video of all presentations featuring (among others) Assistant Attorney General for Antitrust Doug Melamed, NY Assistant Attorney General for Antitrust Harry First, Microsoft counsel Rick Rule and Former Solicitor General Boyden Gray
   - [Discussion on US v. MS on PBS TV with host Jim Goodale, Prof. Nicholas Economides, and Prof. Eleanor Fox, in streaming video, first broadcast on November 16, 2000](#)
   - [Story in Wired magazine on Microsoft’s proposal for Apple allow clones](#)

10. **Other Networks**
   
a. To be added.

   Copyright 2012, N. Economides