Economic and optimization models to study operational and strategic questions for IT/network goods such as: software, web services, digitized goods, intermediaries and exchanges, peer-to-peer networks, web caching, internet services. Topics include pricing strategies; product differentiation and quality of service; segmentation; standardization; systems competition.

- Student workload includes (a) sharing preparation and presentation of research articles, and (b) developing (a working draft of) an original research paper on a suitable topic.
- Suggested prerequisites: introductory courses in industrial organization, game theory, and information technology.
- Current location and schedule: Tuesday 12-3pm, Room 161, AOB IV.
- Meeting times, weight on different topics and grading methods are tentative and negotiable.
- Please email instructor for discussion (hemantb@ucdavis.edu).
Part I. nonlinear pricing, quality-differentiation

background (3 hours)


applications to information goods (4 hours)

caching technologies, piracy, digitized information goods, digital distribution and storage, pricing under quality uncertainty


Part II. quality uncertainty

mechanisms for dealing with quality uncertainty, hidden action (3 hrs)


Part III. network congestion and pricing

background (3 hrs)


applications in internet interconnection and pricing (3 hrs)


applications in QoS for internet traffic and services (3 hrs)


Part IV. network externalities

background


empirical analysis


standards wars, compatibility


systems competition


two-sided networks


Part V. other IT topics

upgrades


piracy, copyright


Administrative Details

Workload and grading

There will be between 3 and 6 readings assigned per session (3 hr meeting), typically a mix of research papers and background readings. Generally there will be 1-2 lead articles that need to be read and discussed in more detail, and additional related papers where we focus on higher-level questions including framing of research problem, methodology, contributions and research opportunities.

Class structure Each session will start with a summary of the research questions asked, the answers provided by the readings, and the questions still open. Following that, we will summarize the key theories and methods used. Subsequently, 2-3 students will lead the discussion of the research papers assigned to them.

Class preparation: readings All students are expected to have read all the required readings for that session. You do not need to read every article in detail (verify every derivation etc.) but you should master 1-2 articles for each session.

Class preparation: writeup All students must prepare a 2-3 page (combined) summary of all papers. Discuss: primary questions and/or issues raised by the papers; which questions do they address? what are the key similarities and differences? what are the open research questions (especially those that appeal to you)?

Class preparation: discussion leader(s) lead an in-depth discussion of individual papers. Please plan to spend about 30-40 minutes on each paper. You should have some sort of structured presentation (including both a summary and critique) which others in the class could use to focus on during the discussion - it should guide the reader through what the paper was about, why it was convincing, interesting and important.

All students will be expected to write a research paper relating to one or more of the topics covered in this class. Each student will (with guidance from instructor)

by week 4 define a focal area for proposed research, identify a specific research problem;

by week 5 develop a preliminary list of related articles;

by week 7 do preliminary model-building and analysis;

by week 10 culminating in a written description of the research problem, model, analysis, results, and implications/applications.
Evaluation and grading will be done on the basis of discussion leadership (33%), summary writeups and participation (33%), and research paper (33%).

Guidelines for writing weekly summaries

- In the first pass, skim the papers and create a logical plan: understand the commonalities, differences, and connections between the papers.

- Then read each paper in detail. Understand the primary questions and/or issues raised by the papers. Precisely, which aspect of these do each of the individual papers address? How do they address the questions, what answers do they provide? Do you accept the methodology? Do you accept the answers? Beyond correctness, are they useful in extending our understanding of the phenomenon?

- Do the papers raise additional questions that they do not answer (e.g., in extensions and future research section, though some even do so in the introduction and claims!). Are they still open questions? Think also of other related questions not mentioned in the papers.

- Finally, if your 2-page summary is now 5 pages long, make it short.

Guidelines for discussion leaders

Here are some suggested general guidelines for preparing your presentation. They may not work for all papers - please modify as you appropriate depending on the type of paper you are discussing (e.g., overview vs. research, or analytical vs empirical).

1. What are the main question(s) or issues addressed? Why are these interesting? Where do they fit, in terms of the larger picture (of research) in the area?

2. What is the methodology used? Is it appropriate? Are the models or empirical analysis sufficient to answer the questions? Are assumptions appropriate and realistic?

3. What are the main conclusions and take-aways? If possible, critique them (positive and negative) in terms of how precisely and convincingly they answer the main questions addressed.

4. What new/unanswered questions does the paper leave one with? What might you want to explore - is it worthwhile and is it feasible?