Goal: The course covers analytical pricing and inventory models in distribution channels and supply chains. The focus is on place (distribution), price and promotion of the 4Ps under an operational environment. It introduces essential demand and supply theories and analytical modeling techniques to doctoral students, bring them to the research frontier on the SC-marketing interfaces and grant them ability to publish on both operations management and marketing journals.

Prerequisite: Basic optimization techniques, probability theory and microeconomics.

Related Courses: 26:799:675 Marketing Models; 26:799:685 Supply Chain Inventory Models

Textbook: None. The course is based on lecture notes and academic journal papers.

Class Participation: Class participation is necessary. Students are required to discuss lecture materials in class.

Homework: None. But understanding lecture notes and papers is essential for passing the course.

Presentation: Each team (with at most 2 students) is required to give a lecture based on one journal paper (see the paper list on Page 2).

Term Paper: Each student is required to write one research proposal, which is due at the end of the spring semester (May 8). See the detailed instructions on Page 3.

Exam: One take-home final. Exam questions are related to class materials. You have 24 hours to finish it independently.

Grades: 15% class participation, 15% presentation, 20% term paper and 50% final exam.
**Presentation**

Depending on enrollment, each team (with at most 2 students) will select one paper (listed below) and give a formal lecture based on the paper. In the lecture, you need to explain the research problem, the motivation, the model, and the solution to the problem. You also need to compare the paper to existing work and point out the contribution. Feel free to take you time to clearly explain the paper.

Besides the presenters, the rest of the class will serve as discussants. The main task of a discussant is to provide a critique of the paper presented: the significance of the problem, the suitability of the model, the limitations of modeling assumptions, the role that these assumptions play in obtaining results, and possible extensions. In addition, discussants should look for common themes or key issues that link related papers and enhance our understanding of the topic. Lastly, discussants are expected to raise challenging questions that would guide class discussion.

The presentation will be graded based on how well you motivate the research and how clearly you explain the model and results.

**List of journal papers:**


Term Paper

The term paper is due on May 8. It should be at most 12 typed pages without reference (12pt Times New Roman, 1 inch margins on all sides, double-spaced). In your term paper, you should

a. Identify an open research question: either an interesting real world phenomenon or a gap in the existing literature;

b. Provide a literature review that makes clear the importance of the topic and how existing papers fail to address the new research question or do not provide a satisfactory answer;

c. Outline a suitable model to address the question and sketch the analysis that you would want to carry out.

For an academician, there is nothing more challenging and rewarding than publishing on top journals (e.g., Management Science, Operations Research and Marketing Science) and make an impact. The publishing process may be lengthy and painful. Therefore, I do not expect that you will have a complete answer to a problem (especially, a difficult problem) in such a short period. Your work will be graded based on the importance of the problem, the modeling feasibility, and the potential significance of the results.
Topics covered (tentative)

1. Demand theory and profit maximization from a failure rate perspective


2. Pricing and double marginalization in a manufacturer-retailer distribution channel/supply chain


3. Promotion and pass-through rates


4. Strategic pricing leadership and game formats in distribution channels

5. Dynamic Pricing with fixed capacity/inventory


6. Student in-class presentation

- See the paper list on Page 2

7. Joint pricing and inventory decision models