OIDD 940
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Fall 2018

Wednesdays, 1:30 PM - 4:30 PM, Conference Room

This is an introductory doctoral course on operations management. We will focus on many classical papers, as well as discuss major recent research streams, which occupied our field in the last 10-20 years. Methodologically, we will study mathematical models as well as empirical and experimental work which has been advancing recently.

The goals of this course are (1) get you acquainted with major research streams in Operations Management (2) orient you in tradeoffs one faces in doing modeling vs. data-driven work, (3) stimulate your research ideas through paper discussions and (4) prepare you for concisely explaining key results of the paper.

This course will be primarily based on discussions of papers presented by students. A note after each paper in the syllabus indicates who will present it (myself or student) and to what extent you need to read it: skim (meaning read introduction and conclusion, and skim through the results) or read rather carefully. I highlighted papers that you need to read carefully.

There will be several homeworks which are meant to serve as a practice for applying some basic concepts. Homeworks are due at the beginning of the session. You can discuss homeworks and work together on them but each student must make a separate submission. Moreover, each student will come up with a topic for a course paper which should relate to one of the topics that we discuss. The basic idea for the paper will be due mid-course, and last session will include presentations of the course papers.

There will be many readings and a few presentations per person per course. Final grade will be a combination of homeworks, course paper and paper presentations/discussions.

Most materials are available electronically – let me know if you are unable to find any of the papers.
Guidelines for paper discussants

The discussant for each paper should become an expert on that paper: the discussant should clearly understand the model, the solution methodology and the insights. Hence, I recommend that you study syllabus in advance and form preferences over topics you want to study in details. Furthermore, the discussant should be prepared to answer questions on how the paper compares with related literature, i.e., the discussant should skim the key references in the paper as well.

Presentations on each paper should be approximately 30-35 minutes in length. I suggest using approximately 12-15 slides (NOT copies of the paper pages). Writing on the board can be used as well but it is much harder. The presentation should cover at least the following items:

• What are the main objectives of the paper, i.e., what is the author (or authors) attempting to achieve with this paper?
• Briefly describe the model. The emphasis is on brief, since the assumption should be that everyone has read the paper.
• List the key assumptions. Which are the key assumptions, i.e., the ones that are needed for analytical tractability and/or ones that are needed to obtain the qualitative insights. (Do not list all assumptions, since that would be a poor use of time.)
• What are the novel features of the model? Are there features of the model that are novel, i.e., that have not been incorporated into other research?
• Briefly describe the solution methodology. What techniques/theorems are used to obtain the answers in the paper? If the solution methodology is novel and potentially useful in other applications, then this should be emphasized.
• What are the key insights from the paper? What are the key lessons that we learn from the paper? Which are surprising? Which contradict previous theories/models?
• What directions are there for future research? How should this paper lead to additional work.

It is clearly impossible to completely cover each of these points for each paper in 30-35 minutes. Hence, the discussant should emphasize the points which are most relevant.
OIDD 940: Reading List

Class 1: Overview. Basic Inventory Models

(no pre-readings for the first class)

1. K.J. Arrow, T. Harris, Jacob Marshak, Optimal Inventory Policy, *Econometrica* 1951. (myself)
2. Rudi, N. and S. Netessine. Lecture notes on inventory models. 2007. (myself, I will distribute a copy)

Class 2: Advanced Inventory Models and Empirical Evidence


September 12: No class, I am teaching in SFO (sorry!)

Class 3: Information in Supply Chains

Class 4: Managing Variability in Supply Chains: Quick Response and Risk Pooling  September 26


Note: Wharton Empirical Conference is September 27-28. Be sure to attend!

Class 5: Supply Chain Contracting  October 3


Class 6: Productivity in manufacturing and services  October 10

Class 7: Manufacturing Strategies   October 17


Class 8: Queueing Models   October 24


Class 9: New Product Development, Diffusion and Innovation   October 31


*** We break for INFORMS conference on November 7 – no class. ***
Class 10: Product Variety: Choice and Substitution     November 14


Class 11: Revenue Management       November 21


*** Paper ideas (1-2 paragraphs) are due on November 15. ***

Class 12: Behavioral Operations Management      November 28


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**Class 14: Project Presentations and Conclusion**

December 12

*** Final papers (around 10 pages) are due on December 12. ***