COURSE OBJECTIVES

This is an advanced readings seminar focusing on modeling in marketing. Topics are drawn from both the theoretical and the empirical research streams in marketing, econometrics and strategy. During class, we will be discussing classic and contemporary articles, their major characteristics and structure, their assumptions and findings, and their impact on the literature in their field.

At the end of the course you will successfully be able to build and analyze an economics based model and appreciate the contribution of modeling to marketing. The seminar will impart a critical intuition of how these models define and solve research problems. Looking at a data set, you will be able to understand the different options you might have available in order to convert the data into information.

This course is intended primarily for marketing Ph.D. students. Graduate students from other areas also may register upon approval by the instructor. Prior knowledge of econometrics and game theory would be very helpful, though not a pre-requisite. One of the best ways for doctoral candidates to understand a research area is to critically evaluate examples of research in that area.

CLASS FORMAT

Except the first meeting, we will generally follow the scheme below for the class meetings. We will usually start with an overall discussion of the reading paper(s). Each class will focus on journal articles that most effectively illuminate a key class of quantitative models. One or more students from the class will be selected as discussion leader(s) for specific papers. This will be followed by detailed talk and discussion about data analyses, model estimation and interpretation of results by the instructor.

The topics have been selected to cover a broad range of quantitative models and substantive domains in marketing strategy. We cover a broad class of models - survival models, financial analyses, market share models, diffusion models, time series models, and functional data analysis. These models will be more aggregate than disaggregate and the implications more strategic than tactical. We select journal articles for a broad cross-section of substantive topics that have high topical interest in current research - marketing-finance interface, user generated content and social media, and innovation. In addition, the topics cover diverse industries that have uniquely been the focus of significant research (e.g. entertainment and movies industry, hitech industry, pharmaceutical and life sciences etc.)

STUDENT DELIVERABLES

There will be many components of student evaluation. These components and their respective weights for calculating the final course grade are given below:
Grading:

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Class participation</td>
<td>30%</td>
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<td>Critique</td>
<td>30%</td>
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<td>Assignments</td>
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<td><strong>Total</strong></td>
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Class Participation:

In this advanced Ph.D. seminar, high degree of involvement of all students is expected. Students are expected to have thoroughly read and evaluated all of the assigned readings before class. I ask for regular and punctual attendance at all sessions. Students must provide a valid excuse for non-attendance, in advance.

Critique:

On each session, students will prepare a summary and critique of one of the readings for the day. Students may work in groups; however, critiques must be prepared individually. All students must participate constructively in the discussion on every reading, even if they are not responsible for the critique.

In going through papers for class-discussions, you should keep the following issues in mind about the paper you are looking at:

- What new research questions are raised by the paper?
- What are the major (conceptual, methodological, analytical) strengths and limitations of this paper?
- What model do the authors use? Why? Are there any alternate specifications of the model that were possible? What type of data would be required if we were to use the alternative model?
- How can you extend the paper?

Assignments:

This course is built on the idea that "you don't understand it until work on the data". Students will be provided a dataset based on the paper we discuss. The class focuses on how to collect, clean, and prepare data, formulate the model, develop the code to estimate the model. We then focus on interpretation of results, robustness analyses, and possible extensions. Students will be given time to work on the assignment in class. These assignments will likely take some time outside class as well. Therefore we discuss fewer papers for discussion in each class session. The assignment must be completed and submitted before the next class.

- Working together is highly desirable and is strongly encouraged for this class. Collaboration in research is the norm in our field and therefore leveraging each-others’ strengths is a useful skill to acquire.
- Students may use any programming language they wish. Having said this, the use of SAS or R is strongly encouraged, for two reasons. 1) There is a positive network externality of using SAS and R within the modeling community. 2) I am most familiar with both SAS and R and can provide maximally helpful feedback on the code.
Appendix I:  
Class Schedule and List of Readings

Note: Students will be assigned one paper per class to read and prepare for discussion. The instructor may also discuss the other papers in class. More details on the assignments and the associated datasets will be given in class.

Session 1

Road Map for the class and methods overview

- Discussion of research interests of students

Assignment: Description of data sets to be used; Introduction to programming in SAS and R

Session 2

Survival Models I (Parametric Hazard models; accelerated failure rate models)  
Market Entry; sales growth of new products across global markets


Assignment: Hazard models; Life-Table method; Kaplan Meier method; Accelerated Failure Time models; Competing Risks models; Discrete Time Models; Proportional Hazards models; Impact of censoring, heterogeneity, and truncation

Session 3

Survival Models II (multilevel and multiprocess models - modeling repeated outcomes and correlated hazard models)  
Technological competition and market disruption


Reference:
We will work on some common formulations of the hazard models and on some more recent advances in this field in class.

Assignment: Coding non-parametric hazard models in SAS/aML; Statistical Formulation and estimation of hazard model; multilevel, time-varying variables, semi-parametric baseline duration pattern, multiple duration dependencies, replication and heterogeneity

Session 4

Marketing - Finance Interface I (Short time returns - event study method)


Assignment: Introduction to WRDS, CRSP; Estimation of short term returns using multiple methods: market model, market adjusted model, mean model, Fama-French 3 Factor model with and without accounting for momentum effects

Session 5

Marketing - Finance Interface II (Long term returns - calendar time portfolio; BHAR)


Assignment: Estimation of long term returns using multiple methods: calendar time portfolio method, BHAR, and ITARS

Session 6

Functional Data Analysis I (spline regression; functional regression; functional clustering)
Modeling Sales and PLC in Fast Decay categories


Assignment: Introduction to functional data analysis (FDA), a new class of nonparametric techniques; modeling discrete data in functional form using smoothing spline approach
**Session 7**

**Diffusion models (Classic Bass model - including meta and augmented extensions)  
Emerging markets and global product diffusion**


**Assignment:** Approaches to model new product diffusion in emerging markets including the Bass model and its variants, models using functional data analysis

**Session 8**

**Functional Data Analysis II (eWOM and user generated content)  
Entertainment industry and social media**


**Assignment:** Popular models for research in entertainment and movie industry

**Session 9**

**Time series models  
Research in Life sciences industry**


**Assignment:** Introduction to time-series models; Autoregressive (AR) models, integrated (I) models, moving average (MA) models; handling serial correlation

**Session 10**

**Final Presentations**

- Feedback and course wrap-up
Additional Readings