The Wharton School
University of Pennsylvania

Models for Marketing Strategy
MKTG2710/7710

Fall 2022

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Class meetings: Tu/Th 10:15-11:45, JMHH 65

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Course objective

The course will develop your skills in using analytics to make marketing decisions. Compared to other courses in marketing analytics, the focus is less on "what is happening?" or "what will happen?" and more on "what should we do?" I.e., the course develops your skills to go from descriptive and predictive analytics to prescriptive analytics.

For instance, in the area of marketing mix decisions, rather than only learning "how do sales of our five products tend to change as price and advertising levels change?" or forecasting "how are sales and profits of our five products likely to change if we increase our prices by 12% and our advertising by 24%?", we will proceed to the decision "what should the price and advertising level be for each of our products, taking into account that we can spend at most $180,000 in each quarter?"

As another example, in the area of new product design using conjoint analysis, we will not only ask "how do customers trade off price, power and warranty?" but proceed to the decision "what should our price, power and warranty be?"

The course is self-contained and does not assume prior experience with marketing analytics.

We will cover a variety of models and tools. These will allow us to tackle challenges in four main areas. Ordered roughly by increasing level of complexity, these are:

- Marketing mix modeling & optimization
- Choice modeling, conjoint analysis, and market simulators
- Modeling elements of customer lifetime value
- Quantifying causal effects in marketing

Class recordings

All classes will be recorded, and accessible through Canvas without special permission.

Prerequisites

For Wharton students:

MKTG2710:   MKTG101, STAT101, knowledge of regression (e.g., STAT102 or 112)
MKTG7710:   MKTG611, STAT611, knowledge of regression (e.g., STAT613 or 621)

For non-Wharton students:

If you have a quantitative orientation and some knowledge of marketing, you likely have the skills and outlook to succeed in this course. Please contact me at vdbulte@whaton.upenn.edu and we'll discuss if the course is a good match for you.

Cross-listing of MKTG 2710 and 7710

The course is cross-listed across the undergraduate and graduate programs. However, the flow of the sessions accommodates the lower number of sessions in the graduate program, without requiring make-up work by students enrolled in 7710.

Software

The course is designed to develop your skills in using quantitative models to address business problems rather than hone your software programming skills. We will therefore be using Excel and JMP, two programs Wharton students are already familiar with. A licensed version of JMP Pro is available for download through the Canvas course site, under the "Modules" tab.

If you are already comfortable with R, Python, SAS or Stata, you are very welcome to use any of these rather than JMP. I will provide full support only for Excel, JMP and SAS.

Course materials

Readings, handouts, data files, code and cases will be made available through the course Canvas site. This includes two course packs distributed by Study.net.

Course pack A is required for both 2710 and 7710. Course pack B is required only for 2710 as it contains cases we'll discuss on "2710 required only days." However, graduate students who would like to join us on those days should get hold of course pack B as well.

If you would like to complement those materials with a textbook, I suggest:

Principles of Marketing Engineering and Analytics. 3rd ed. by Gary L. Lilien, Arvind Rangaswamy and Arnaud De Bruyn, 2017.

Using electronic devices in class

Using electronic devices in class tends to distract both the user and their fellow students. But some uses can be justified, especially for a course like this. So, here is the policy we'll start with:

    Phones: No.

    Tablets: For note-taking.

    Laptops: For in-class exercises or case discussion involving data analysis.

Let's start with this policy, see how it works, and amend it if and when needed.

Grading

I will use grades to reward you for (1) your mastery of the materials and (2) your engagement as it fosters learning both by yourself and your fellow students. Here are the weights:

Engagement, incl. Ed Discussion & pre-class submissions	20%
Homework / Problem sets	20%
MarketSpace simulation	5%
In-class assessments/tests	55%

What you are rewarded for engagement, not attendance. There is no direct penalty for not attending.

Homework / problem sets and pre-class submissions are meant to help you learn, which is often fostered by a mixture of working alone and in small teams. Unless explicitly stated that an assignment must be completed individually, I encourage you to collaborate with a few fellow students. Note, I don't encourage the "divide and conquer" approach where each team member works only on a single problem. That may minimize effort, but also minimizes learning.

Pre-class submissions will be listed as "Quizzes" on Canvas and will be displayed as counting for "1 point". That's just Canvas logistics. These submissions are your answer(s) to some case preparation question(s), and will be graded for participation rather than "quality," let alone "being correct." The only exception are answers that seem clearly non-justifiable to me and that still do so after class because they were not given a reasonable justification during the discussion. When I tally all the various ways in which students contributed, I expect that each pre-class submission will count for slightly more than 1 point out of 100.

Two assessments/tests will be held in class over the course of the semester, on 10/11 and 12/1.

For undergraduates (2710), there is no grading curve. For graduate students (7710), there is no grading curve beyond whatever constraints are imposed by the MBA Program.

Schedule of sessions

| | Session # | | | |
Date	UG	MBA		
			A. Marketing Mix Modeling (MMM)	
8/30	1	1	Introduction	*Keurig*
9/1	2	2	Regression for MMM	
9/6	3	3	MMM & Optimization: Statics I	*Georgia Aquarium*
9/8	4	4	MMM & Optimization: Statics II	
9/13	5	5	MMM & Optimization: Dynamics I	*Oranzada Pow!*
9/15	6	6	MMM & Optimization: Dynamics II	
9/20	7	7	MMM & Optimization: Dynamics III	
9/22	8	8	More Questions (and Answers) about MMM	
			B. Choice Modeling, Conjoint Analysis & Market Simulators	
9/27	9	9	Binary Logit I	*Star Digital*
9/29	10	10	Binary Logit II	
10/4	11	11	Multinomial Logit & Choice Modeling	
10/11	**12**	**12**	**In-class assessment #1**	
10/13	13		Case – Using both Qual & Quant Analytics	*L'Oréal Plénitude*
10/18	14		Debrief of in-class assessment #1	
10/20	15		Case – MMM hands-on	*Svedka Vodka*
10/25	16	13	Choice-Based Conjoint Analysis & Simulators	*Montclair Video*
			C. Modeling Elements of Customer Lifetime Value	
10/27	17	14	Modeling Durations (Adoption & churn)	
11/1	18	15	Modeling Durations (Adoption & churn)	
11/3	19	16	Case – A/B Test for Customer Acquisition	*Artea*
11/8	20	17	Managing CLV	
			D. Quantifying Causal Effects	
11/10	21	18	Why Experiments are the "Gold Standard"	
11/15	22	19	A/B/*n* Testing	
11/17	23	20	Quasi-Experimental Methods I	
11/22	24		*Medicines Co.* case, review session, or other topic chosen by UG students	
11/29	25	21	Quasi-Experimental Methods II	
12/1	**26**	**22**	**In-class assessment #2**	
12/6	27	23	Intro to MarketSpace & Debrief of in-class assessment #2	
12/8	28	24	Simulating Response to Competitor Entry	*MarketSpace* exercise

Names in italics refer to traditional cases. We will discuss many more applications in class, including customer targeting at ABB Electric, salesforce allocation at Syntex Labs, an experiment at ZipRecruiter assessing how price affects acquisition and retention, a conjoint study assessing what features boost acceptance of COVID-19 boosters, an experiment at Walmart assessing how text messaging increase vaccine uptake among Walmart customers, and an analysis of 2,700+ A/B/n tests on Optimizely.