293 – Marketing Analytics UC Davis Graduate School of Management (Tentative) Syllabus - Fall 2016

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Office hours: Davis: Tue 11a-12p, GH-3308 / Sac: Wed 9-10p, Rm TBD / Bay: Sat 4-5p, BR-1502

Course Description

Marketing analytics can extract insight from data, and that insight can inform action. This course is designed to provide you with a solid understanding of the broad array of analytical tools and types of data available to marketers. More importantly, however, it is designed to help you learn how patterns in data can help you answer questions pertinent to marketers.

Marketing managers are often tasked with making decisions. For example: How much advertising should we conduct? Should we offer a temporary price reduction? Which consumers should we target? These decisions often rely on insights generated from empirical analysis. In many cases, a manager will be tasked with a specific decision, and have available a dataset collected for the task at hand. <u>The first objective of this course</u> is to prepare you to use a wide array of analytical tools to extract insights from data, and use those insights to inform marketing decisions.

Often, however, a marketing manager's job is not that simple. At times, a manager may have decisions to make an insufficient data to make them. In such cases, s/he must know what data to collect. <u>The second objective of this course</u> is therefore to provide you with knowledge of a variety of data types, to prepare you for data collection.

Finally, a manager may have a different problem—they may have a wealth of data available to them, but be uncertain about what value can be extracted from that data. This scenario is becoming more and more common as data collection becomes easier. Firms routinely work with outside sources (consultants, academics) to help them maximally leverage the data they have. <u>The third objective of this course</u> is to train you to identify what insights can (and cannot) be extracted from datasets you have at your disposal. Put another way, you'll learn how to determine what can (and cannot) be logically deduced from the patterns observed in a dataset.

At the end of the day, no one marketing analytics course can provide experience with all analytical tools each student will use at their next job, as each person's work environment will differ. What a course *can* do is train each student how to *think* about marketing problems and data, in order to facilitate rapid emersion in their post-graduation analytics environment, and provide a foundation for making smart, data-driven decisions. That, at a high level, is the goal of this course.

Required Text:Principles of Marketing Engineering, 2nd edition
Gary L. Lilien, Arvind Rangaswamy, Arnaud De Bruyn
ISBN-10: 1412022525, ISBN-13: 978-1412022521Required Software:Marketing Engineering for Excel
R & R Studio

Required Course Materials

Course Schedule

Module	Week	Topic	Davis	Sac	Bay Area	
		Class room:	GH-2310	MC-2205	BR-1502	
		Time:	12:10-3:00	6:00-9:00	9-12, 1-4	
Analytics Basics	1	Introduction to Analytics and R	09/21	09/21	10/01	
	2	Measuring effects with imperfect data	09/28	09/28		
Heterogeneity	3	Targeting individuals	10/05	10/05	10/15	
	4	Segmentation	10/12	10/12	10/15	
	5	Positioning	10/19	10/19	10/20	
Consumer Choice	6	Promotions & intertemporal choice	10/26	10/26	10/29	
	7	Choice modeling	11/02	11/02	11/19	
	8	Search and consideration sets	11/09	11/09	11/12	
	9	Loyalty Programs	11/16	11/16	19/09	
Review	10	Final Projects + Course Review	11/30	11/30	12/03	

Module	Week	Topic & subtopics	Assignments Due
Analytics Basics	1	Introduction to Analytics and {R}	
		Course overview	Install Software (see instructions)
		Coding in R	Read Bookbinders Book Club Case
		Regression review $+$ advanced topics	
	2	Measuring effects	
		Experimentation & primary data	Read assorted articles
		A/B testing in digital marketing	
		Measuring effects with secondary data	
	3	Targeting individuals	
		Using data to identify heterogeneity	Advanced Regression HW
		Online recommendation systems	Read assorted articles
Heterogeneity	4	Segmentation	
		Segmentation	Read PME Ch. 3
		Targeting	
	5	Positioning	
		ConnecTor case - presentations & recap	Turn in ConnecTor Case
		Positioning and competition	Read PME Ch. 4
	6	Promotions & intertemporal choice	
		Promotions and substitution patterns	Read PME Ch. 7, pp. 176-192, 205-212
Consumer choice		Dynamic pricing & price discrimination	Read assorted articles
	7	Choice modeling	
		Blackberry case - presentations & recap	Turn in Blackberry Case
		Modeling static choices	Read assorted articles
	8	Search and consideration sets	
		Consideration sets & heuristics	Read assorted articles
		Online & offline consumer search	
	9	Loyalty Programs	
		ABB Electric case - presentations & recap	Turn in ABB Electric Case
		The goal-gradient hypothesis	Read assorted articles
		Loyalty programs & competition	
Review	10	Final Projects + Course Review	
		Final projects $+$ course review	Final Project Presentations

Installing Software

Before the first day of class, you'll need to install three pieces of software on your computer: R, R Studio, and Marketing Engineering for Excel. We'll be using this software in-class on day one.

R & R Studio

In the past, some GSM students have had difficulty with R when running a different version from the instructor. Consequently, I ask that you install the following versions of R and R Studio and not update them until the course is complete:

R version 3.3.1 (2016-06-21) <u>https://cran.cnr.berkeley.edu/bin/windows/base/</u>

R Studio version 0.99.903 <u>https://www.rstudio.com/products/rstudio/download3/</u>

Marketing Engineering for Excel

To purchase the software for this course, and the cases that we'll be using, visit this link:

http://www.decisionpro.biz/students/new-students/subscribe-to-student-materials/levels

There, you'll enter the access code MEXL6633. You'll be able to download and install the Marketing Engineering add-on for Excel, and download the case files. The software download should also come with a "Getting Started" tutorial PDF.

Additionally, make sure you have the <u>Data Analysis and Solver</u> add-ins for Excel ready to go. It's an add-in that comes with Excel but (for some silly reason) isn't automatically activated. Instructions for turning them on can be found with a quick Google search.

Team Selection

You will choose your own teams, though I reserve the right to assign students to a team should the need arise. Team size will vary by location. Based on preliminary class enrollment information, teams will likely have 4 people in Davis, 5 in the Bay Area, and 3 in Sacramento.

Form your team by Monday, 9/26 at the latest (10/03 for Bay Area students). When your team is formed, have one person e-mail me the names of all members of the team (and CC your teammates).

Make an effort to find teammates that view this class in the same way that you do. More bluntly: Everyone has different priorities in life, so if you want to spend X hours on each assignment, don't choose teammates that want to spend X + 10 or X - 10 hours. Make sure you're all on the same page.

If a team is not satisfied with a member's participation, that member may have their grade penalized, be removed from the team, and/or be required to complete the remaining assignments alone (dramatically increasing the exiled member's workload). This will be done to ensure there is no freeriding, and that those who want to spend less time on assignments do not take advantage of those who want to spend more. I absolutely understand that there will be heterogeneity in how much this course matters to each of you, but you need to be honest with your teammates up front about how much time you want to invest.

If at any point you feel a team member is not pulling his or her weight, talk to me immediately.

Grading & Assignments

In-class participation and cases (40%): Most classes will have an in-class case or assignment. Some will have several. Missing class will result in the forfeiture of those points. Students that miss more than one class (except for medical emergencies) will not be able to earn a grade higher than a B. All files for in-class work should be e-mailed to Mike within ten minutes of class ending (all files should be sent in a single e-mail). In-class assignments will typically not run until the end of class, so in practice you will be able to e-mail them much earlier than that. You'll also have (short) pre-class readings (some from the book, some from articles I've posted on canvas), which will help prep you for the lecture and facilitate discussion. Articles on canvas will be preceded by their session number (e.g., files for the second session will have "02" in their file name).

Homework (40%): There are four assignments (10% each)—one individual homework assignment and the three team cases. The individual homework assignment will be placed on Canvas. Access to the case files comes with your purchase of the Marketing Engineering for Excel software (see above), as the cases are specifically designed around that software. Each case comes with a set of questions for you to answer. I'll be adding one or two questions to those.

Your team will submit a write-up for two of the cases and present your answers to a third (selected randomly once teams are formed). Presentations should be 12-15 minutes long without questions (so that when questions are asked, you can finish in 20 minutes). Write-ups should be a two-page response to case questions (single-spaced, size 11 Calibri font), excluding tables and figures (all of which should be in an appendix after the write-up).

Final Project (20%): Teams will also work on a semester-long project of the choose-your-ownadventure variety, which will culminate in a 20-minute presentation on the last day of class. You have two options. You will receive guidance from Mike regardless of which option you choose.

Option 1: Collect data from a firm (maybe one you are affiliated with) and examine a problem of interest to them. The firm must be willing to let you present your results to the class.

Option 2: Research a topic in analytics (see topic list below) and teach the class what you have learned.

Below are a list of topics you may be interested in pursuing for option 2. Some of these are clearly (and solely) analytics-based (e.g., missing data). Others are general marketing topics for which you'll need to identify an analytics focus (of which many are potentially available):

Missing Data and Data Fusion Word of mouth and peer influence Pulse advertising, memory, and awareness Freemium products and network effects Website paywalls versus advertising as a revenue source

You may propose other topics you find interesting as well, so long as you can identify an analytical approach to teach us during your final presentation. The idea behind the final project is to give you time to work on something that is more tailored to your team's interests, so I am open to you proposing alternative topics, or even alternative projects that deviate from options 1 and 2 above.

Your final project topic should be reserved (by e-mailing Mike) by Monday, 10/03 at 9:00 am (Friday, 10/07 for Bay Area students). No two teams are allowed to have the same topic or use the same dataset. This part is pretty simple—e.g., if you want to do "Missing Data and Data Fusion" from the list above, tell me ASAP so you can lock it down. More generally, I want you to have a general sense of your topic of interest by 10/3, so that you can provide a more detailed proposal the following week ...

A two-page (since spaced, size 11 Calibri font) preliminary project proposal is due Monday, 10/10 at 9:00 am (Saturday, 10/15 for Bay Area students). Mike will approve your plan or ask for revisions. You should communicate with him informally before that deadline, however, in order to ensure you're headed in the right direction.

Submitting Assignments:

Assignment	Davis	Sac	Bay Area
Install all software	$W \ 09/21$	$W \ 09/21$	Sa $10/01$
Form teams & e-mail Mike	M $09/26$	M $09/26$	M $10/03$
Reserve final project topic	M $10/03$	M $10/03$	F $10/07$
HW #1: Advanced regression	W $10/05$	W $10/05$	Sa $10/15$
Submit final project proposal	M $10/10$	M $10/10$	Sa $10/15$
Team Case #1: ConnecTor	W $10/19$	W $10/19$	Sa $10/29$
Team Case #2: Blackberry	W $11/02$	W $11/02$	Sa $11/12$
Team Case #3: ABB Electric	W $11/16$	W $11/16$	Sa $12/03$
Final Project	$W \ 11/30$	W 11/30	Sa $12/03$

Below is a (hopefully) helpful calendar of all of your deliverables.

All deliverables should be e-mailed to Mike by 9 am on the date listed. For "Install all software," you need not e-mail—simply install the software before class time, so that you're ready to go (note that you will not be allowed to have your laptop on during class until we begin the assignments, so you won't be able to install in-class). For team cases, please submit your write-ups and slide decks in PDF format.

For organizational purposes, please label your assignment files as follows:

Team assignments:	293-{Program}-{Team number}-{Assignment Name}
Individual in-class assignments:	293-{Program}-{Last Name}-{Class#}

For e-all e-mail inquiries and HW submissions, please label the subject line as follows:

 $293-\{Program\}-\{Subject\}$

Late Assignments:

Cases will be presented by teams on the day they are due. Consequently, late cases receive zero credit. Final projects also cannot be late, since they consist solely of a presentation to your classmates. Individual assignments—those from in-class work and the first homework assignment—can be late. 10% will be docked if they are late by less than one day. For each day after the first an assignment is late, you lose another 20%.

Course Policies

A few simple policies that all pretty much revolve around the general rule of "respect your classmates":

(1) Laptops should be brought to class each day, but should only be open when we're working on an inclass assignment requiring it to be on (Mike will let you know when to open and close your laptops), so as to not distract your classmates. I was a student here long ago—and I remember students being annoyed by flashing G-chat windows on others' computers. Similarly, phones should not be used during class in any capacity.

(2) Don't cheat or plagiarize. It's not a victimless crime—in the case of group work, your actions could harm others if caught, and in the case of individual work, you're screwing with the grading curve.

(3) Be on time. Showing up late distracts others when they're trying to pay attention to the course, and will leave you less prepared for group work if you need your teammates to catch you up on what you missed.

(4) Do the assigned readings before class, so you can contribute to the conversation. The best classes are the ones in which all students are active in discussions. This is in part because speaking up helps you retain things in your memory, and in part because what others have to say (e.g., a real-world marketing example shared by your classmate) helps provide depth to your learning environment.

Lastly, slide decks for each lecture will be made available <u>after class</u>, but not before. The slide decks won't be available before class because I want you to think about and arrive at the answers to questions on your own—i.e., I don't want the answers printed off and in front of you. Don't stress out about taking super detailed notes. There are no exams. Be intellectually engaged in class and think carefully about the questions posed to you and you'll get the most out of the course. Memorizing details from this class will not be helpful to you in your career—but learning how to think about data will be.