

MKT 372 Advanced Data Analytics for Marketing

1 Course Overview and Learning Objectives

Formerly titled “Data-Driven Marketing”, the aim of this course is to offer a rigorous data-driven marketing program to advanced undergraduate students in business administration. The modern business concept of marketing and business analytics consists of a broad range of activities, which frequently uses data analysis to provide guidance for managerial decision making. Therefore, the focus of this course is twofold: studying the modern methods of data analytics and formulating managerial decisions based on the results.

Analytic methods can provide descriptive statistics, generate predictions given past and present information, and make causal inference on the impact of past business activities and estimate the effectiveness of future business strategies. Technology advancement enables businesses to accumulate a large amount of data in various types. It is imperative that a modern-day business leader has the fundamental understanding of using data for decision making. For complex decision-driven problems, a business leader must also be aware that there can be still missing information despite the availability of large amount of data. Hence, she must make good use of the data at hand and also be creative in order to discover new information sources. Using the most sophisticated and insightful analysis, a business leader must be able to communicate and formulate her decisions precisely and persuasively. Accordingly, this course is designed to provide hands-on opportunities for the students to develop a diverse set of analytics skills based on data. The learning objectives of this course is as follows.

- Manipulating and summarizing data using computer languages and software, including graphically representing data and inferences.
- Using the principles behind more advanced marketing and business analytics concepts and methods.
- Drawing inferences from data in order to address descriptive, predictive, and causal questions related to decision making.
- Identifying and explaining missing information and discovering what further information can be collected by experiments or from external sources.
- Designing rigorous approaches to collecting primary and secondary data.
- Making managerial recommendations based on the results from marketing analytics.

2 Hybrid Online and In-Person Class

Meeting Time

Section	Class Time	Class Location
05230	MW 3:30-4:45 pm	UTC 3.134

Hybrid Class Format

Students enrolled may be divided into groups and notified by the instructor which group will be allowed to participate in the physical classroom and which will participate online. All of the classes will be streamed online. A student who has health concerns and is unwilling to participate in the physical classroom may opt to take all the classes online.

3 Contact Information

Professor

Jason Duan

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Teaching Assistant

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4 Prerequisites

Admission to a Business major or credits for MKT 337 and STA 309.

5 Course Materials

The following materials will be used throughout this course:

- Lecture notes — available to download on Canvas.
- Articles — available to download on Canvas.
- R — free and open-source software for statistical analysis and data visualization.

- Python 3 — free and open source programming language.
- Recommended text — Note that there is no required text.
- Assignments will be posted to Canvas.

While most of the course material can be downloaded for free from the internet, I would like to ask that you not share the course materials with anybody outside the course without first obtaining my permission.

6 Class Format and Policies

To achieve the course objectives a combination of lectures, assignments, a mid-term exam and a final team project will be used.

- Class lectures are designed to teach you the methodological aspects of the market analytics. Additionally, you will be asked to read the lectures notes for class discussion as a basis for understanding the application of these methods.
- A series of assignments will provide the opportunity to enhance your learning through practice. They are designed to develop your practical skills and analytical toolbox.
- There will be an online mid-term exam, which will examine the fundamental understanding of the methods introduced in the course. All the questions in the exam will be multiple choice and will not involve using computer software.
- You will work in a team to complete a larger final research project. This will involve definition of the problem, data collection to address the underlying issues, and data analysis to provide answers to the problem. The project will culminate in a team presentation at the end of the semester. Each team should have two or three members.

7 Grading

Your final grade will be evaluated on the basis of homework assignments, a mid-term exam and a team final project. The average of the assignment grades will constitute 40% of your final grade, the mid-term exam 30% and the final project makes up the remaining 30%. No other “points” can be given at the end of the semester.

The final grade will not be “curved”. Grading will be based on “cut-offs” of: **91-100 = A**, **89-91 = A-**, **87-89 = B+**, **81-87 = B**, **79-81 = B-**, **77-79 = C+**, **71-77 = C**, **69-71 = C-**, **67-69 = D+**, **60-67 = D**, below **60 = F**. If your final average happens to be exactly at a cut-off point, you will receive the higher grade. Please spare us both the time and do not ask for special consideration.

8 Students with Disabilities

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259. Please also contact me early in the semester regarding any special assistance I may provide.

9 Class Schedule

Week	Date	Topics
1	26-Aug	Course overview, software installation
2	31-August	Introduction to R
	2-Sep	Review of linear regression
3	7-Sep	Labor Day (no class)
	9-Sep	Fixed and random effects in regression
4	14-Sep	Market segmentation
	16-Sep	Consumer heterogeneity
5	21-Sep	Binary data
	23-Sep	Customer acquisition, new technology adoption
6	28-Sep	Count data
	30-Oct	Website and store visit frequency
7	5-Oct	Discrete-time duration data
	7-Oct	Customer attrition, repeated purchases
8	12-Oct	Mid-term exam review
	14-Oct	Mid-term exam
9	19-Oct	Choice data
	21-Oct	Brand and product choices, conjoint analysis
10	26-Oct	Multivariate Data
	28-Oct	Brand positioning, market survey data
11	2-Nov	A/B Testing
	4-Nov	Time Series Data
12	9-Nov	Time Series Data
	11-Nov	Market and commodity price forecast
13	16-Nov	Causal effect and natural experiments
	18-Nov	Consumer clustering and segmentation
14	23-Nov	Classification
	25-Nov	Day before Thanksgiving (no class)
15	30-Nov	Course project preparation
	2-Dec	Course project preparation