

Syllabus

UCSD MGT 100: Customer Analytics

Spring 2023

Instructors

Professor: Kenneth C. Wilbur [Bio CV](#). Office hour: Friday, 11 AM-12 PM, on Zoom

Teaching Assistant: Prachi Bhalerao. Office hour: Monday, 7-8 PM, at the Canvas Zoom tab

Teaching Assistant: Sahil Mehra. Office hour: Friday, 4-5 PM, at the Canvas Zoom tab

Welcome

We welcome everyone to this course. We want all students to feel valued and safe in this environment.

We want you to succeed and we work hard to help make that happen. We expect you to participate actively, knowing that we have good intentions toward you, and investing the time and effort needed to learn this valuable class material.

We know that we cover challenging material, quickly. This is not an easy class for most people. Yet please rest assured that nearly all past students completed the course with a passing grade. We have received almost uniformly positive comments about the value of the course, the style in which we taught it, and the skills students gained as a result of studying this material.

With all those things said, we understand that student learning styles differ and no single approach is best for everyone. We also know that everyone experiences challenges and difficulties. Please tell us if you have trouble learning in this environment. We may be able to make suggestions, connect you with resources, or find appropriate accommodations. We will work with you to the best of our ability.

Navigation

The course outline, slides, class scripts and class recordings are online at <https://kennethcwilbur.github.io/mgt100/>.

Canvas is (only) for readings, data, all student deliverables, study groups and grades.

All messages and discussions will be on the Piazza page linked from Canvas.

Communication Policy:

- All student questions and comments should be posted on Piazza to ensure that all students can access all shareable information.
- We check Piazza first, so Piazza answers will be fastest. Kindly do not email us or send messages on Canvas. If you do, we will kindly ask you to post your question on Piazza before we answer it.
- You can post a private message on Piazza if you need to notify us about a documented personal issue that affects deliverable timing, such as a family emergency or serious illness. We will require documentation if the issue affects a grade or a deadline.
- The best time to catch the professor for a chat is shortly after class. Please be judicious before class.
- Office hours are for open-ended conversations that would be inefficient on Piazza. They occur on zoom on a drop-in basis, meaning that we meet students in the order they arrive.

Course Introduction

Customer Analytics is the use of customer data to improve business decision-making. Customer data are combined with economic theory, statistics and econometric modeling to inform and improve business policies.

MGT 100 was designed from scratch by UCSD faculty for quantitative UCSD students. It serves as a core course in the Business Economics major and an alternate core course in the Business and Marketing minors.

Our primary goal is to develop student understanding of data-driven business decision-making. Our secondary goal is to enable students to perform and interpret analytic techniques using code.

Our course design principles are experiential learning and assessment of applications. We believe that “you don’t understand it until you code it.” You will see that is true.

As an undergraduate class, we focus more on timeless principles of customer analytics. We focus on a somewhat idealized set of analytics frameworks in which firms estimate heterogeneous demand models and use those models to evaluate counterfactual policies. These frameworks are used in some sophisticated organizations, but they are not used in the majority of businesses for various reasons, including lack of skilled personnel and environmental volatility. Rady offers an MSBA course with the same title, but it covers very different content, focusing on more widely applied frameworks and immediately applicable skills.

We will code in R. R is free and originally designed for data analysis, data visualization, modeling and estimation. We will use base R and a set of R packages that are collectively

known as the “Tidyverse.” The Tidyverse suite is effective, popular, good for collaboration, well-maintained, well-documented and easier to adopt than many alternatives.

A tangent: Students often ask whether they should learn R or Python, or why we code in R. This question is understandable because R and Python overlap in some areas. We view R as a great supplement to Python. Python is a general-purpose toolkit and the most popular language for many data-related tasks. R is a specialist language designed expressly for the purposes of data analysis, data visualization and model estimation. This class will focus more on visualization and estimation, which is why we will focus on R. Additionally, we are not aware of any Python packages that approach the strengths of the R/tidyverse combination, though we hope to see such Python packages in the future. The R/Python distinction is like sportscar/truck; their basic functionality overlaps, but most experts would choose the right tool for the job at hand, whether it is winning a race or hauling furniture. Our answer to the question above is that you should learn both R and Python, then choose the right tool for each particular task, keeping in mind that Python and R can each call the other’s packages. We further advise that a successful career in analytics requires frequent re-tooling, so you should embrace proficiency in that process in its own right, so your skillset can continue to evolve.

Each class meeting will have the same format. First, we will discuss key concepts, followed by a short break, and then we will step through an R script to implement selected techniques using data. Each week’s assignment will require you to revise the class script to accomplish a related series of tasks. Students will complete online quizzes each week, including turning in their scripts. We will conclude with a final exam to assess understanding and ability to apply major concepts.

We seek to simulate a professional experience within the classroom. We therefore expect consistent, timely attendance and participation. We will ensure sufficient time and resources to complete all deliverables.

We understand that student resources are limited. We rely exclusively on free materials such as websites, videos, books and articles. We provide links to further free materials for students interested in deeper learning.

Most students will need to commit approximately 5–10 hours per week outside of class to have a successful experience. We may need to modify our terms and expectations as we proceed. Student feedback is welcome at any point.

Deliverables and Grading

Grade are calculated as :

- quizzes (60%)
- final exam (30%)
- attendance & intermissions (10%), with opt-out available

Assignments: We will provide weekly assignments asking you to modify class scripts, and consider the resulting insights learned about the product, market, and customers. You will submit your R scripts and answers as part of the weekly quiz. Answers and script output will need to match for quiz answers to count as correct.

Quizzes: We will require weekly quizzes after our second class meeting. Quizzes will be completed online with deadlines shortly before the subsequent class. Quiz questions may test your understanding of the previous week's class content, ask you to apply key ideas from that week's reading, and submit your answers to that week's assignment.

Final Exam: Exam questions will mimic the style and content of the quiz questions. Therefore, the best way to prepare for the exam is to complete the quizzes throughout the quarter. Like the quiz questions, exam questions will focus on understanding and ability to apply key concepts.

The final exam will be in-person at the university-appointed time. It will be on paper with no digital devices allowed. It will be designed to last 1 hour but we will give up to 3 hours for anyone who needs extra time or accommodation. We will offer an early exam on **June 8** for anyone who plans to leave town before the exams period.

Attendance & Intermissions: We require and assess class attendance.¹ We also assess "Intermission" deliverables turned in during class meetings. We will require consistent seating locations after week 1.

Attendance opt-out: Attendance is required by default, but you may opt out via an optional Canvas assignment, due prior to the second class meeting. If you opt out, you can consume the class recordings asynchronously and submit the deliverables on the Canvas page. Then the attendance portion of your grade will be dropped, so quizzes would be 2/3 and final exam 1/3. We will record class meetings and post recording links shortly after class meetings, so students who miss class can still follow the material.² Students who opt out will also be held out of the randomly assigned study groups, as grouping them with students who attend class regularly may be unfair to the latter group. You may still attend the class in person if you like so long as you do not sit in another student's assigned seat.

Contribution adjustments: A few students' final grades will be adjusted based on class contributions, up to one full letter grade. An example of a positive contribution would be helping to consistently move the class discussion forward, or pointing out when something is unclear. Examples of negative contributions include multitasking, distracting others, frequent side conversations, repeated tardiness, not keeping your assigned seat, nonconformance to classroom norms or comments that distract from class discussions. Contribution grade adjustments will be reserved for positive and negative outliers.

Curve and Bonus: The average grade will be curved to somewhere between a B- and A-,

¹We did not require attendance in an earlier iteration, but then observed that live class attendance correlated with final grade averages at 0.46, suggesting—but not proving—that attending class may facilitate learning.

²Please note, it is possible that technical problems could interfere with that process. We will do our best but cannot make any guarantees.

depending on the the section's overall performance, relative to the instructor's expectations and past sections. If 67% of CAPE evaluations are completed, each student's lowest quiz score will be dropped, increasing the mean grade.

Alternate Project: A few rare students ($<5\%$) enter this course with advanced R skills and deep understanding of modeling techniques. We are willing to entertain alternate grading criteria for those students so they can focus on deepening their existing skills. They may (1) explain their pre-existing command of most of the material, and (2) propose an original project that would serve in place of the regular deliverables, so long as it is not also intended for use in any other class. Original projects should relate to customer analytics and offer concise empirical analyses of some novel question or for some compelling purpose. Projects must be proposed by the student, are subject to negotiation and approval by the professor, and must be agreed upon prior to the second class meeting.

Course Policies

Late Enrollment: Students who add the course after week 1 are individually responsible for immediately catching up on all class content and deliverables.

Study groups and collaboration: We will randomly assign 5-person study groups shortly before our week 2 class meeting, among students who do not opt out from attendance. Students remain individually responsible for their own quiz answers and R scripts. Sharing R scripts between study groups will be considered a violation of academic integrity policies. Please be advised that it is possible for us to detect this. There will not be any collaboration available on the final exam. Therefore, we recommend each student complete assignments individually, then meet regularly with their study group to discuss results, prior to submitting R scripts on the quiz.

Late Submissions: Late deliverables will only be accepted in grave circumstances with documentation, such as a doctor's note for serious illness, with notification required prior to the deadline. If you find yourself in such a situation, we encourage you to briefly notify us on Piazza, then focus on taking care of yourself and your family, while trusting that you will later provide appropriate documentation and we will agree on a reasonable extension that accommodates your situation.

Recommendations: Professor is glad to write a strong letter of recommendation for Masters programs in business or social science for any student that earns an A. Professor is glad to write a strong letter of recommendation for Ph.D. programs for any student that earns an A+. Letter content will focus on the student's performance relative to the cohort, and why that is meaningful for the program in question. Professor is not qualified to write recommendations for graduate programs outside of business or social sciences. Professor receives more recommendation requests than he has time to complete and therefore may be unable to write for students who earn less than an A.

Re-grade Requests: Any request for regrading must be made in writing on Piazza within

two weeks of a deliverable being assessed, or the end of the quarter, whichever comes first. The professor and/or TA will entirely regrade any such deliverable, meaning that the resulting grade change may be positive or negative, depending on the specifics of the situation.

Important UCSD Topics

We adopt the following policies based on university guidance.

Academic Integrity

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your words and actions. Lying, cheating, or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying, or dishonesty will be reported to the Academic Integrity Office and may result in sanctions. Sanctions can include a failing grade in this class and suspension or dismissal from the University.

Integrity of scholarship is essential for an academic community. As members of the Rady School, we pledge ourselves to uphold the highest ethical standards. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind.

You can learn more about academic integrity at:
<https://academicintegrity.ucsd.edu/>

The complete UCSD Policy on Integrity of Scholarship can be viewed at:
<http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>

All aspects of the UCSD honor code apply in this course. If you are ever unsure how they apply, please ask your classmates, TA, or professor for clarification. It is much better to be conservative about honor code violations than to take a risk.

We will use automated means to detect plagiarism of submitted R scripts after week 10. Please do not share any R script outside of your own study group, as you cannot control what someone else may do with it.

We explicitly allow any use of large language models like ChatGPT or others. We advise you that their accuracy is often poor, so please be careful, as you remain solely responsible for the accuracy, content and conciseness of your submitted answers. We view LLMs as good sources of ideas and pointers, but poor sources of accurate information and poor substitutes for human understanding.

Students with Disabilities

A student who has a disability or special needs and requires an accommodation in order to have equal access to the classroom must register with the Office for Students with Disabilities (OSD). The OSD will determine what accommodations may be made and provide the necessary documentation to present to the instructor and OSD liaison.

Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter (paper or electronic) issued by the OSD. Students are required to discuss accommodation arrangements with instructors and OSD liaisons in the department 72 business hours in advance of any exams or assignments. No accommodations can be implemented retroactively.

Please visit the OSD website <https://osd.ucsd.edu/portal/tutorial.html> for further information or contact the Office for Students with Disabilities by phone at 858-534-4382 or via email at osd@ucsd.edu.

Non-Discrimination Policy Statement

The University of California, in accordance with applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, gender identity, pregnancy, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services. The University also prohibits sexual harassment. This nondiscrimination policy covers admission, access, and treatment in University programs and activities.

Title IX

The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. Rady students have the right to an educational environment that is free from harassment and discrimination.

You can make a complaint of harassment or discrimination – or simply make an appointment to find out more information – by contacting OPHD:

- by phone at 858-534-8298
- by email at ophd@ucsd.edu
- or online at the Overview for Students webpage

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a Rady student affairs staff member, a department Chair, a faculty

member, or other University official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed.

If you find yourself in an uncomfortable situation, ask for help. The Rady School of Management is committed to upholding University policies regarding nondiscrimination, sexual violence, and sexual harassment.

Health and Well-Being

Throughout your time at UC San Diego, you may experience a range of issues that can negatively impact your learning. These may include physical illness, housing or food insecurity, strained relationships, loss of motivation, depression, anxiety, high levels of stress, alcohol and drug problems, feeling down, interpersonal or sexual violence, or grief.

These concerns or stressful events may lead to diminished academic performance and affect your ability to participate in day-to-day activities. If there are issues related to coursework that are a source of particular stress or challenge, please speak with your professors so that we are able to support you. In addition, UC San Diego provides a number of resources to all enrolled students, including:

- Counseling and Psychological Services: 858-534-3755 or caps.ucsd.edu
- Student Health Services: 858-534-3300 or studenthealth.ucsd.edu
- CARE at the Sexual Assault Resource Center: 858-534-5793 or care.ucsd.edu
- The Hub Basic Needs Center: 858-246-2632 or basicneeds.ucsd.edu