

COURSE INFORMATION

Course title:	Customer Analytics	Credits:	1.5
Course code:	BAMA 520	Class location:	HA 337
Session, term, period:	Period 6	Class times:	M/W 4-6pm PST
Section(s):	001	Pre-requisites:	n.a
Course duration:	Sep 06 to Oct 07, 2022	Co-requisites:	n.a
Division:	Marketing & Behavioural Science		
Program:	FTMBA		

INSTRUCTOR INFORMATION

Instructor:	Miremad Soleymanian	Office location:	Office Hour Zoom Link
Phone:	778-990-5241	Office hours:	Wed 2-3pm PST
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COURSE DESCRIPTION

Traditionally, marketers have focused on the acquisition of new customers through mass advertising and price-oriented promotions, accepting as a fact of life that newly acquired customers would eventually switch to competitors. Today, the focus has changed from customer acquisition to customer development and retention, particularly for the firm's best customers. This shift from customer acquisition to development and retention requires a new mindset from product-centric to customer-centric management and raises new questions. For instance, what is the maximum amount a firm should spend to acquire a customer? Should firms want to keep their customers forever? What can be learned from customer defection?

New forms of information technology provide increasingly rich data of individual-level customer behavior to address these issues but few firms have the expertise to intelligently act on such information. This course provides an in-depth introduction to analytical methods of predicting customer actions, such as the likelihood of purchasing a product or donating to a charity in response to an offer, purchasing in a product category, and defaulting on a loan. These predictions dramatically improve common marketing decisions such as segmentation, targeting, upselling, cross selling, and designing promotion.

While you will learn how to write computer code to crunch numbers so as to solve some common data analytics problems, this course *alone* will not turn you into a data scientist. It will, however, enable you to connect data to management decisions, and most importantly, communicate with both technical people and with non-technical managers about technical topics and their relation to business problems (a highly valued skill¹).

¹ Professionals having this in-demand skill are called Analytics Translators: <https://www.mckinsey.com/business-functions/quantumblack/our-insights/analytics-translator>

LEARNING OBJECTIVES

By the end of this course, students will be able to:

- (1) Structure management decisions such that available data and proper machine learning algorithms can support
- (2) Explore available data with respect to its limitation and relevance to the management decisions
- (3) Build predictive models of the target behavior using statistical and machine learning algorithms
- (4) Critically evaluate model results
- (5) Derive managerial implications from the model results to support the decisions

These five objectives correspond closely to the industry standard, Cross-Industry Standard Process for Data Mining, CRISP-DM². Your pursuit of the more technical objectives, namely (2) to (4) will be facilitated through a popular analytics platform, R in RStudio. On the other hand, to achieve objective (1) and (5), you will practice the art of **storytelling-with-data** in short “storytelling” presentations that emphasize the importance of clear communication and business understanding, with neither formulae nor jargon.

COURSE FORMAT

This course combines two pedagogical approaches:

“Flipped classroom” approach: Students are expected to do a **weekly reading** and a **quiz BEFORE** (or at the beginning of) each class, and during the class, we will clarify and further develop the concepts and tools through **discussion, group exercises, and hands-on R tutorials**.

“Community of learners” approach: Students are expected to support one another’s pursuit of the course objectives. For example, students will be randomly paired each week to work on the R exercise. You should offer help if your tutorial partner gets stuck or ask for help if you need it. To facilitate in-class activities and practice storytelling-with-data, you will be assigned to a team of 6-8 students for the whole semester. You should consider such a team your “study group”, actively contributing to it, patiently listening to others’ thoughts, and building off one another’s ideas. In addition, when another student team delivers their “storytelling” presentation, you should engage them and provide constructive feedback. Last but not least, to help everybody generalize their learning beyond the specific cases and examples in this course, you are encouraged to share with your classmates your own passion project or any inspiring industry project you come across on the internet or through your industry mentor.

LEARNING MATERIALS

Text

- Copyrighted chapters from a yet-to-be-published textbook by R. E. Krider, D. S. Putler and R. P. Tavakol will be posted on Canvas

² https://exde.files.wordpress.com/2009/03/crisp_visualguide.pdf

Technology Requirements

- Software: RStudio, available for free download (<https://www.rstudio.com/products/rstudio/download/>)
- Calculator: Sharp EL 531X or Texas Instrument BA II Plus (or equivalent).

Learning Management System & Communication

- Canvas (<https://canvas.ubc.ca>) will be used for posting **weekly reading**, administering **weekly quizzes**, **assignment submission**, etc.
- UBC student email addresses will be used for communicating information and disseminating class materials. It is your responsibility to check your UBC email and the course's Canvas site frequently.

ASSESSMENTS

Summary

Evaluation in the course will be based on a combination of individual and group work:

Individual	Weekly Quizzes	10%
	Assignment 1	10%
	Peer-Content Engagement	5%
	Final Exam	40%
Pair/Group	Short Exercises	15%
	Assignment 2	10%
Team	Storytelling with Data	10%
	Total	100%

Details of Assessments

Weekly Quizzes (10%)

Students require to complete a **weekly reading** and write a **short quiz** that relate to the reading. Two of these five quizzes will be available 48 hours before class and closed 30 minutes before class. The remaining three quizzes, typically covering the important topics about result interpretation, will be administered inside three classes. Please see the detailed course schedule at the end of this document. The purpose of the quizzes is to encourage students to read the material carefully before the class, in which the quiz questions will be discussed. As such, a late penalty will be applied to a quiz taken after the quiz window.

Short Exercises (15%)

Each week will have an exercise to be turned in by the **pair** of students. The usual submission deadline is one day after each class: 11:59pm.

Assignment 1 (10%)

This **individual**-based assignment will require you to evaluate a model and derive managerial implications (answering “so what?”).

Assignment 2 (10%)

This **group**-based assignment (group of 3 students) will require you to go through the whole CRISP-DM process for a management case.

Storytelling Presentation (10%)

In a **team of 6-8 students**, you will give a short live presentation of an assigned case (10 minutes). A Q&A session will then follow immediately, allowing non-presenting students to ask questions.

Peer-Content Engagement (5%)

Students are expected to engage their peers with respect to various course contents:

Engaging your exercise and assignment partners, e.g., Contribute to the submitted exercises or assignment by cross-checking each other's analyses, resolving any technical and conceptual challenges facing either partner, and discussing what the best responses would be to individual questions in the tutorial exercises or assignments

Engaging your "study group" teammates, e.g., Volunteer your ideas and actively listen to your teammates' in in-class activities and your team's preparation for the "storytelling" presentation.

Engaging other teams, e.g., Provide constructive criticism to other teams' "storytelling" presentations

Engaging all your classmates, e.g., Share with the whole class in last session your **passion project** or any industry analytics project that you come across on internet or through your industry mentor. For those planning to present such "Bring-Your-Own-Stories", please fill out and submit a preliminary BYOS proposal form by Week 3.

In addition to my own observation and records, the grade in this component will also be based on a **peer-content engagement reflection form** you will submit at the end of the term. This form and the preliminary BYOS proposal form are now available on Canvas as assignments. To ensure accurate information in the form, it would be a good idea for you to continuously log your engagement every week using the form.

Final Exam (40%)

The final exam will involve paragraph-length answers to conceptual questions, interpretation of reported metrics, some short answer questions, and/or some hand-calculation to demonstrate your understanding.

COURSE-SPECIFIC POLICIES AND RESOURCES

Missed or late assignments, and regrading of assessments

Late submissions will not be accepted and will receive a grade of zero.

Academic Concessions

If extenuating circumstances arise, please contact the RHL Graduate School program office as early as reasonably possible, and submit an [Academic Concession Request & Declaration Form](#) <https://webforms.sauder.ubc.ca/academic-concession-rhlee>. If an academic concession is granted during the course, the student will be provided options by RHL, or by the instructor in consultation with RHL, per [UBC's policy on Academic Concession](#).

Other Course Policies and Resources

Code Plagiarism

Code plagiarism falls under the UBC policy for [Academic Misconduct](#). Students must correctly cite any code that has been authored by someone else or by the student themselves for other assignments. Cases of "reuse" may include, but are not limited to:

- the reproduction (copying and pasting) of code with none or minimal reformatting (e.g., changing the name of the variables)
- the translation of an algorithm or a script from a language to another
- the generation of code by automatic code-generations software

An "adequate acknowledgement" requires a detailed identification of the (parts of the) code reused and a full citation of the original source code that has been reused.

Students are responsible for ensuring that any work submitted does not constitute plagiarism. Students who are in any doubt as to what constitutes plagiarism should consult their instructor before handing in any assignments.

POLICIES APPLICABLE TO COURSES IN THE ROBERT H. LEE GRADUATE SCHOOL

Attendance

Excepting extenuating circumstances, students are expected to attend 100% of their scheduled class hours. Absent students limit their own academic potential, and that of their classmates, and cause unnecessary disruption to the learning environment. Students missing more than 20% of the total scheduled class hours for a course (including classes held during the add/drop period) without having received an academic concession will be withdrawn from that course. Withdrawals, depending on timing, could result in a "W" or an "F" standing on the transcript.

Punctuality

Students are expected to arrive for classes and activities on time and fully prepared to engage. Late arrivals may be refused entry at the discretion of the instructor or activity lead. Students arriving later than halfway through a scheduled class will be treated as absent for that class.

Electronic Devices

In-Person Regulations

Devices such as laptops, tablets, and cell phones are not permitted to be used in class unless directed by the instructor for in-class activities. Students who do not follow the School's policy in this regard may be required to leave the room for the remainder of the class, so that they do not distract others. Research shows that students' use of laptops in class has negative implications for the learning environment, including reducing their own grades and the grades of those sitting around them.

Citation Style

Please use the American Psychological Association (APA) reference style to cite your sources.

Details of the above policies and other RHL Policies are available at:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,199,506,1625>

UNIVERSITY POLICIES AND RESOURCES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others

and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website at <https://senate.ubc.ca/policies-resources-support-student-success>.

Respect for Equity, Diversity, and Inclusion

The UBC Sauder School of Business strives to promote an intellectual community that is enhanced by diversity along various dimensions including status as a First Nation, Metis, Inuit, or Indigenous person, race, ethnicity, gender identity, sexual orientation, religion, political beliefs, social class, and/or disability. It is critical that students from diverse backgrounds and perspectives be valued in and well-served by their courses. Furthermore, the diversity that students bring to the classroom should be viewed as a resource, benefit, and source of strength for your learning experience. It is expected that all students and members of our community conduct themselves with empathy and respect for others.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

COPYRIGHT

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline and could be subject to legal action. Any lecture recordings are for the sole use of the instructor and students enrolled in the class. In no case may the lecture recording or part of the recording be used by students for any other purpose, either personal or commercial. Further, audio or video recording of classes are not permitted without the prior consent of the instructor. Students may not share class Zoom links or invite others who are not registered to view sessions.

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam) people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE SCHEDULE

(Subject to change with class consultation)

Class	Date	Topics	Exercise & Assignment
Foundations			
1	Sep 07 (Wed)	Introduction to Customer Analytics and overview	
2	Sep 09 (Fri) (make-up class)	Measurement Scales (in-class quiz)	Data exploration exercise
Supervised Learning			
3	Sep 12 (Mon)	Multiple Linear Regression	Regression exercise: Case 1
4	Sep 14 (Wed)	Logistic Regression (Online quiz available) Storytelling: Case 1	Logistic regression exercise: Case 2
5	Sep 19 (Mon)	Model Assessment (in-class quiz) Storytelling: Case 2	Assignment 1
6	Sep 21 (Wed)	Non-linear Effects and Multicollinearity	
7	Sep 26 (Mon)	Tree Models (Online quiz) Storytelling: Case 3	Tree Model exercise: Case 4
Unsupervised Learning			
8	Sep 28 (Wed)	Cluster Analysis; Principal Component Analysis Storytelling: Case 4	Clustering and PCA exercise: Case 5
9	Oct 03 (Mon)	Market Segmentation (In-class quiz) Storytelling: Case 5	Assignment 2
Above & Beyond			
10	Oct 05 (Wed)	Guest Speaker, Bring-You-Own-Stories & Review	