



QUINLAN SCHOOL of BUSINESS

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Office Hours: Monday, 4:30 PM – 5:30 PM (and by appointment)

MARK 661-001, Customer Analytics, Spring 2019 Mondays 6:00 – 9:00 PM, Schreiber Center 302

CATALOG DESCRIPTION

Prerequisites: Prerequisites: MARK 460, ISSCM 491, HRER 417, and MARK 461 (only for non-MSBDA students)

Suggested Additional Prerequisites: INFS 492, INFS 791 and FINC 620

This course develops an understanding of predictive analytics and its role in the profit-driven customer management.

Outcome: The students will learn value-centric approach towards analytics use in the business decision making and understanding of the advanced analytic approaches. The course takes hands-on approach with predictive analytics and equips students with skills that may be applied immediately at job.

REQUIRED COURSE MATERIALS

Readings:

- *Articles and notes*—Available via Sakai and the LUC Library e-resources.

Software:

- SAS Studio and SAS Enterprise Miner—Available to Quinlan students and accessible via Business Analytics Lab and/or <https://odamid.oda.sas.com>

COURSE OVERVIEW

Firms accumulate extensive amount of information about consumers' choices and their responses to marketing campaigns, promotions, direct mail etc. However, few firms were able to use and deploy these data intelligently. The business is becoming increasingly data-driven and ability to use and respond to customer data-driven insights is becoming a new way of building competitive advantage. In this course, students will learn the scientific approach to marketing with hands-on use of various methods in databases, analytics and computing systems to collect, analyze, and act on customer information. Students will gain competency on how to interact with and manage marketing analytics team.

COURSE DESCRIPTION

In this course the students will study how to use data analytics to learn about customer needs and improve targeting individual consumers. The course will encourage students to apply scientific methods and models to predict and respond to customer choices. This is the key part of learning Big Data. The term Big Data is viewed in the broad sense as it relates to various aspects of the consumer behavior, which may be captured, measured, and transformed to the digital form. Through applications of statistical models to the analysis of the real-world databases, the students will learn how firms may use customer data to serve customers better.

TEACHING METHODOLOGY

The course will consist of lectures, guest speaker presentations, discussions, and hands-on exercises in developing, implementing, and operating analytics models.

COURSE OBJECTIVES & LEARNING OUTCOMES

Students completing this course will have an understanding of and the ability to apply the following:

1. Learn appropriate analytical methods and models used in predicting customer responses
2. Learn methods to analyze unstructured textual customer data
3. Develop specific skills, competencies, and points of view needed by analytics professionals in the field.

GRADING POLICIES

Your course grade will be based on the following components:

Exam	200 points
Assignments (in-class and home)	200 points
Participation and Professionalism	<u>100 points</u>
	500 points

GRADING SCALE:

A \geq 460 points	C+ \geq 385 and $<$ 400 points
A- \geq 450 and $<$ 460 points	C \geq 365 and $<$ 385 points
B+ \geq 435 and $<$ 450 points	C- \geq 350 and $<$ 365 points
B \geq 415 and $<$ 435 points	D+ \geq 335 and $<$ 350 points
B- \geq 400 and $<$ 415 points	D \geq 300 and $<$ 335 points
	F $<$ 300 points

A brief description of each component follows. Specific details will be discussed in class.

Exam: The purpose of the exam is to help you to understand and synthesize the course material. The exam will largely resemble working on a business problem, which analytical teams are routinely solving. Students are not expected to memorize detailed information from the text or from cases; however, have to complete exam by the last date of class (see schedule). Students are expected to work on exam individually, no group work is allowed.

Assignments: These exercises are intended to give you hands-on experience working with analytical models and approaches introduced in class. The assignments (both home and in-class) will comprise 40% of your final grade. I will discuss submission requirements in class. Remember, completing these assignments will also help your participation grade and will help you develop the skills necessary to do well on exams and understanding value-driven approach to customer analytics. If the assignments submitted after due date, I will deduct 10% of grade for each day after due date. Late submissions will not be accepted after solution are posted.

Participation: To a large extent, learning in this class is related to your willingness to expose your insights and viewpoints to the critical judgment of your classmates. Thus, each one of you is expected to contribute to class discussions. This includes preparation for class by doing the assigned reading, thoroughly preparing any assigned problems, and presenting your opinions or summaries of material covered in class. The basis for class participation is quality, not quantity. Attendance is a necessary but not sufficient condition for participation. If you do not actively participate, you will receive a very low participation grade even if you attend every class. I will assign a participation grade after each class session using the following scale:

- 1. Detracted from discussion, arrived late, or left classroom early
0. Not present
1. Present, did not contribute
2. Average participation
3. Above average participation
4. Outstanding participation

I will average participation scores at the end of semester and assign grades based on the above scale.

ZOOM Lab Sessions

I will be holding online Lab Sessions using ZOOM (available on Sakai) every week (exact time will be decided in class).

During these sessions I am available to answer any questions you have about past lectures, assignments, or how to work with SAS. Unless otherwise announced, I do not cover new material during lab sessions. These sessions are fully optional, however, I recommend you come with questions if you feel falling behind on any of the material.

Quinlan School of Business Policies:

Attendance

Class attendance is mandatory and essential to the value of the learning experience. Students are expected to attend all class sessions in order to pass the course. Missing more than two of scheduled classes severely jeopardizes the student's ability to pass the course.

In the event unavoidable emergencies or conflicts prevent you from attending class, you must notify the instructor and program director by e-mail prior to missing the class, and request options for covering missed material. Most of the subjects in a course are sequential. Therefore, it is important to understand the material covered in the missed class before the next class.

Make-Up Examinations

Loyola University academic policy provides that tests or examinations may be given during the semester or summer sessions as often as deemed advisable by the instructor. Because Quinlan faculty believe examinations represent a critical component of student learning, required examinations should be taken at the time, indicated by instructor. **Make-up examinations are discouraged.** Exceptions may be granted only by the faculty member or department chair, and only for unavoidable circumstances (illness verified by a signed physician's note, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, or religious observance). A make-up final examination may be scheduled only with the permission of the appropriate Quinlan Assistant or Associate Dean.

If a make-up examination must be given, it is the responsibility of the faculty member to prepare, schedule, and proctor the exam. Limited assistance in proctoring make-up exams may be available through a designated Quinlan administrative assistant. For a student with a documented special testing need, please consult University policy concerning use of the testing center in Sullivan Center at Lake Shore Campus.

Mark 661: Make up exams will generally not be given unless the absence has been excused by the University (see examples above).

Academic Integrity

Quinlan School of Business: All members of the Quinlan School shall refrain from academic dishonesty and misconduct in all forms, including plagiarism, cheating, misrepresentation, fabrication, and falsehood. Plagiarism or cheating on the part of the student in individual or group academic work or in examination behavior will result minimally in the instructor assigning the grade of “F” for the assignment or examination. In addition, all instances of academic dishonesty must be reported to the chairperson of the department involved.

For further information about expectations for academic integrity and sanctions for violations, consult the complete Quinlan School of Business Honor Code and Statement of Academic Integrity on the Quinlan website:

<http://luc.edu/media/lucedu/quinlan-graduate/pdfs/Honor-Code-Quinlan-July2012.pdf>

Mark 661: Academic integrity is what we all expect from ourselves and each other. Violations will be reported to the appropriate honor committee. Please remember that it is your job to report suspected infractions also.

Mark 661 Professionalism Policies

Electronic Gadgets: Please turn off all phones, email, and Internet connections, and anything that beeps, buzzes, or jingles prior to class. Also, do not electronically record (video or audio) class lectures or presentations without prior permission.

Punctuality: Please arrive on time. Arriving late (or leaving early) disturbs my concentration and distracts your classmates. In short, tardiness impairs the learning environment. (This is why “late seating” is not permitted in theaters, opera houses, and concert halls—especially for big ticket performances!)

Victuals: Although drinking non-odoriferous beverages are fine, please no eating or nibbling during class. Breaks will be taken and snacks can be consumed at that time.

Please note: This class may occasionally deviate from the course outlined above. The instructor reserves the right to make changes as needed to the course syllabus.

MARK 661: Customer Analytics
Spring 2019, Schedule and Assignments (Subject to change)

Date	Topic #	Class Topic	Assignment Due
Feb 25	1	Big Data and Value-driven Analytics Process.	Register and access course at SAS on-demand site.
Feb 25	2	Review of SAS Studio.	
Mar 4	<i>Spring Break (No Classes)</i>		
Mar 11		<i>Luna Rajbhandari, Cars.com. Guest Speaker.</i>	Assignment 1 – SAS Practicum
Mar 11	3	Preprocessing Data for Analytic Project. Data Integrity Checks.	
Mar 18		<i>Craig Booth & Anh Pham, Packback.Co. Guest Speakers.</i>	Assignment 2 – DI
Mar 18	4	Prospecting and Targeting Right Customers. Recency, Frequency, and Monetary Value (RFM) Analysis.	
Mar 25	5	Lifts and Gains. Model Assessment	Assignment 3 - RFM
Mar 25	6	Predicting Response with Logistic Regression.	
Apr 1	7	Modeling Consumer Choice using Decision Trees.	Assignment 4 – Uplift Modeling
Apr 8	8	Predicting Response with Neural Networks	Assignment 5 - DT
Apr 8	9	Ensemble Models.	
Apr 15	10	Predicting Timing of Event.	Assignment 6 - NN
Apr 22	11	Analysis of Unstructured Data. Textual Analytics.	Assignment 7 – Surv
Apr 29	12	Machine Learning and Artificial Intelligence.	Assignment 8 – Text Analysis
May 6		<i>Spencer Allee, Ascent RegTech. Guest Speaker.</i>	
May 6		Exam is due	

MARK 661 READINGS

Topic #	References
1	<ul style="list-style-type: none"> • Chapter 1 “Big Data and Analytics” in Baesens, Bart. Analytics in a Big Data World: The Essential Guide to Data Science and Its Applications, John Wiley & Sons, 2014. Link • Ransbotham, Sam and David Kiron (2017). Analytics as a Source of Business Innovation. MIT Sloan Management Review, 58(3), 1. Link • Davenport, T. (2006). Competing on Analytics. Harvard Business Review, 84(1), 98-107. Link
2	<ul style="list-style-type: none"> • Delwiche, Lora D. and C. A. Winters. "SAS® Studio: A New Way to Program in SAS®." Link – supplemental reading to learn interface of SAS Studio.
3	<ul style="list-style-type: none"> • Chapter 2 “Data Collection, Sampling, and Preprocessing” in Baesens, Bart. Analytics in a Big Data World: The Essential Guide to Data Science and Its Applications, John Wiley & Sons, 2014. Link • Chapter 1 (pp. 3-24) in Little, R., & Rubin, D. (2002). Statistical analysis with missing data (2nd ed., Wiley Series in Probability and Statistics). Link to optional reading. Just to get you sense of complexity of missing data topic – you don’t need to go through entire chapter.
4	<ul style="list-style-type: none"> • Streter Hurle, Katie (Feb 1, 2018) Enhancing the customer experience with Big Data Link • Hughes, Arthur Middleton. "Quick profits with RFM analysis." Database Marketing Institute Link
5	<ul style="list-style-type: none"> • Chapter 9 “Assessing Predictive Models” in Abbott, Dean (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, John Wiley & Sons. Link
6	<ul style="list-style-type: none"> • Chapter 8 “Predictive Modeling” (only pp. 230-240) in Abbott, Dean (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, John Wiley & Sons. Link • Logit Regression SAS Data Analysis Examples. Institute for Digital Research and Education - Link

7	<ul style="list-style-type: none"> Chapter 1 “Decision Trees – What Are They?” in Barry de Ville and Neville Padraic (2013) Decision trees for Analytics Using SAS Enterprise Miner, SAS Institute. Link (You need to use your LUC email in order to get access to online book. Also, I suggest skimming through entire book – it provides very detailed description of how to use Enterprise Miner for Decision Trees)
8	<ul style="list-style-type: none"> Chapter 8 “Predictive Modeling” (only pp. 240-247) in Abbott, Dean (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, John Wiley & Sons. Link
9	<ul style="list-style-type: none"> Funda Güneş (05/18/2017) Why do stacked ensemble models win data science competitions? SAS Blogs. Link Chapter 10 “Model Ensembles” in Abbott, Dean (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, John Wiley & Sons. Link
10	<ul style="list-style-type: none"> Chapter 5 “Survival Analysis” in Baesens, Bart. Analytics in a Big Data World: The Essential Guide to Data Science and Its Applications, John Wiley & Sons, 2014. Link Smith, Tyler, and Besa Smith Survival Analysis and the Application of Cox's Proportional Hazards Modeling Using SAS. Link optional reading. Browse through it if you want to learn code for survival analysis.
11	<ul style="list-style-type: none"> Bagga, Simran (08/22/2016) 3 Steps to Big Data Success with Text Analytics. SAS Blogs. Link Chapter 11 “Text Mining” in Abbott, Dean (2014). Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, John Wiley & Sons. Link
12	<ul style="list-style-type: none"> Blake, Morgan (02/21/2018) What Should Machine Learning Actually Learn About Your Customers? Forbes Link Introduction (pp. 1-9) Mohri, M., Rostamizadeh, A., & Talwalkar, A. (2012). Foundations of machine learning. Cambridge, MA: MIT Press. Link You may also read other chapters to learn specific method in machine learning. Rendle, Stefen (2010) “Factorization Machines” In 2010 IEEE International Conference on Data Mining, pp. 995-1000. Link optional reading