
MGMT 635 – DATA ANALYTICS

SPRING 2016

Class Information	
Class Time	Section 001: Th 5:30 – 8:00 (GSM 232)

Instructor Information	
Instructor	Matthew Pickard, MBA, PhD
Office	ASM 2020
Office Hours	T 3:00-5:00, Th 3:00-5:00, and by appointment
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REQUIRED BOOKS



- **Data Science for Business: What you need to know about data mining and data-analytic thinking** (1st Edition), by Foster Provost and Tom Fawcett, ISBN-13: 978-1449361327
- **Data Smart: Using Data Science to Transform Information into Insight** (1st Edition), by John W. Foreman, ISBN-13: 978-1118661468
- **R in Action** (2nd Edition), by Robert Kabacoff, ISBN-13: 978-1617291388
- **[Data Analytics Made Accessible \(Kindle Edition\)](#)**
 - This book is only available through Amazon Kindle

RECOMMENDED BOOKS

- **[Forecasting: principles and practice](#)**, by Rob J Hyndman and George Athanasopoulos.
 - This is a great, free online resource. It gets very good reviews. You'll find it useful for the forecasting unit, but it also contains helpful information for regression (simple and multiple).

REQUIRED SOFTWARE

-  **Tableau's [data visualization software](#)** is provided through the Tableau for Teaching program. I will forward you download and licensing information approximately one week before class starts.

-  You'll need to install the R programming language. We will be performing the vast majority of our data analysis in R. See the instructions on Learn for installing R and RStudio.
-  R Studio make R a lot easier, so we are going to be using it as our development environment. Again, see the instructions on Learn for installing R and RStudio.
- **Microsoft Excel** – you can download the latest version of Microsoft Office from lobomail.unm.edu. Look for the link under the application icons under “Collaborate with Office Online.” I highly recommend using the latest version of Excel.
- **MiKTEX or TEX Live** – You will need MiKTEX (<http://miktex.org/>) or TEX Live (<https://www.tug.org/texlive/>) so RStudio can generate PDFs. Use MiKTEX for Windows and TEX Live on Mac.

COURSE OVERVIEW

We live in the information age. Data analytics is becoming increasingly important in order to be competitive in business. This course will introduce students to basic data analytic techniques; however, the main objective of the course is to teach students how to think critically about data and the decisions made from that data. Throughout the course we will emphasize the entire data analysis cycle, which includes the following steps:

- Define the problem
- Construct a model to describe the problem
- Evaluate possible models and solutions
- Choose and recommend a solution

Data preparation is a very time consuming step that must be completed before constructing a model; however, due to time constraints we will not be covering a lot of data preparation techniques. I strongly encourage students to look into data preparation techniques after they take this course.

COURSE OBJECTIVES

Students who successfully complete this course will:

- Think critically and analytically about data-driven decision-making.
- Demonstrate an ability to choose and apply different data analytic methods (e.g., clustering, regression, decision trees, and forecasting) to a variety of scenarios.
- Demonstrate proficiency in the R programming language.

ASSESSMENT AND GRADING

The points for this course will be allocated as follows:

Final Exam	150
Final Project	200
Data Analytic Methods Research Report	200
Assignments	450
Total possible points	1000

There will be 10 assignments throughout the semester worth 50 points each. I will drop your lowest assignment.

The course grades are awarded based on the following breakdown:

Grade	% of Total	Break
A+	98-100	980
A	93 - 97.99	930
A-	90-92.99	900
B+	88-89.99	880
B	83-87.99	830
B-	80-82.99	800
C+	78-79.99	780
C	70-77.99	700
D	60-69.99	600
F	0-59.99	0

COURSE POLICIES

Professionalism is a Baseline Expectation: The instructor reserves the right to reduce your final grade up to 5% (i.e. a half of letter grade) for unprofessional behavior you display in association with this class. Professionalism is a baseline expectation! Examples of professionalism or lack of professionalism are as follows:

Professionalism:

- Proactively learning the material and going above and beyond assignment requirements.
- Participating actively in class.
- Maintaining a positive, learning attitude.
- Attending class and being on time.
- Attending office hours for help.

Lack of Professionalism:

- Complaining or displaying a negative learning attitude.
- Turning in sloppy work (includes assignments, but especially exams).
- Not following assignment submission instructions.

Late Assignments / Projects: Except in unusual and extreme circumstances (e.g. severe or prolonged illness, death in the family, etc.) which are cleared with the instructor ahead of time, late assignments / projects will not be accepted.

Make-up Exams: Except in unusual and extreme circumstances (e.g. severe or prolonged illness, death in the family, etc.) which are cleared with the instructor ahead of time, there will be no make-up exams.

Grade Appeals: Must be made in writing within one week from when the exam or assignment is returned in class or within one week from the last day of quiz or Graded HW availability. For exams, the one week begins to run when the exam is distributed to the class, even if you are absent. Any challenge must include the basis of your reasoning and any support (from the text) for your position. Your original exam must be returned with your challenge.

Discussion and Peer Study: Studying or discussing course assignments and materials with other class members is **highly encouraged**. However, your exams and other submissions must be your own work. **The principle is that you learn the material.** You are mature enough to know when you cross the line into cheating yourself of the learning experience.

Academic Integrity: Academic integrity is expected from all students enrolled in this course. Cheating is expressly forbidden. Cheating includes copying from the homework, quizzes, exams or files of other students, use of unauthorized material during exams, allowing others to complete Graded HW or quizzes for you, and any other form of academic dishonesty. It also includes failing to report or allowing other students to cheat. Academic dishonesty includes marking absent students as present if roll is taken. If you are unsure what constitutes academic dishonesty, check the [UNM Catalog 2010-2011](#) at 46 or your [Pathfinder \(Appendix\)](#), (see Policy on Academic Dishonesty and Student Code of Conduct), or speak with your instructor. I will refer incidents of cheating on to the appropriate UNM authorities. Cheating will result in an “F” for the entire course.

Access to Education: Qualified students with disabilities needing appropriate academic adjustments should contact the instructor as soon as possible, preferably in the **first week of class** to ensure your needs are met in a timely manner. For information on assistive technology available for student use and additional information on services available through the [Accessibility Resource Center](#). Students are required to attend classes and to arrive on time. Attendance may be taken. While we understand that you may want to visit with your fellow students, please do this before or after class—we will not “talk over” students. Finally, please turn off any audible ringer on your cellphone—we will deduct points if these go off in class.

Audit: A student may register for a course as an auditor, if permission of the instructor is obtained. A student has the **first four weeks** of the semester to change a course to audit status. No changes in audit status will be processed after the fourth week of class. Students are charged the normal tuition rate for auditing a course.

Copyright: All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purposes outside of this course.

Courtesy: Please come to class and focus on what is going on, rather than being distracted by a cellphone, text-messaging, or surfing the web.

Inclement Weather Policy: On days when weather is bad, please listen to local media or check <http://www.unm.edu/news/CampusNews/weather.html> to see if UNM will be operating on a delayed schedule or will be closed. A delay means that classes scheduled before the late campus opening are CANCELLED (For example, if a two-hour delay is announced, then classes scheduled to start before 10:00 a.m. are cancelled. If there is a two-hour delay, the sections of this course that would have started thereafter on that day will be cancelled also. A closure means that UNM will not be opened for the day, or will be closed before the end of the regular work day.

In the event of a delay or closure of UNM **affecting our class on an exam day**, the exam will be given during the next scheduled class meeting. In the event of such a delay or closure during final exam week, you will be notified through a Blackboard Vista announcement on the class site and/or via e-mail to your UNM account of the rescheduling of the final exam. For more information about UNM's inclement weather policy, see <http://www.unm.edu/~ubppm/ubppmanual/3435.htm>.

Incompletes, Drops, and Withdrawals: Your instructor gives an **incomplete** only under extreme circumstances. If you are running into problems with the course, please contact your instructor as early as possible so you do not fall behind. If you need to **withdraw** from school or **drop** the course, please do it in a timely manner and notify your instructor via email, so that he is not forced to give you an F or W/F at the end of the semester. It is the **student's responsibility** to initiate drops or withdrawals from this class and to make sure they are properly processed. Up until one week after the first exam, all instructors give unconditional WPs. After that time, WP/WF will be determined by grades and effort to date.

This course falls under all UNM policies for the last day to drop courses, etc. Please see the [UNM Course Catalog](#) for information on UNM services and policies. Please see the [UNM academic calendar](#) for course dates, the last day to drop courses without penalty, and for financial disenrollment dates.

Privacy and Blackboard Tracking Notice: Blackboard, the course management system we use, automatically records all students' activities, including your first and last access to the course, the pages you have accessed, the number of discussion messages you have read and sent, discussion text, quiz and Graded HW activity and posted discussion topics. This data may be accessed by the instructor or by UNM consultants.

COURSE RESOURCES

This is a Blackboard enhanced class. If you have never used Blackboard, take a look at "[How to Use Blackboard](#)" on the Blackboard Login page. Even if you have, you may learn some tricks to help you navigate Blackboard better. Please inform the instructor if you discover course content mistakes on the Blackboard course site.

All announcements, changes, and due dates will be posted on Blackboard. **It is the student's responsibility to check for communications and changes to the course on Blackboard.**

If you are having technical problems with Blackboard, you can contact free technical support through one of the following ways:

- Phone: (505) 277-0857 (M-F 8am – 5pm MT)
- Email: learn@unm.edu
- Web: Blackboard Help for Students: <http://studentinfo.unm.edu>

You must have a UNM Net ID to access Blackboard. More information on obtaining one can be found at <https://netid.unm.edu/>.

Again, any course content related questions should be directed to the instructor.

INSTRUCTOR AND COURSE EVALUATION

You will be provided an official course evaluation at the end of the semester. This evaluation is anonymous and the results will not be shared with the instructor until the beginning of the next semester. So please provide detailed constructive feedback, there's no risk to you for doing so.

However, I would greatly appreciate constructive feedback throughout the course. Feel free to provide me with feedback at any time in person, by phone, or by email regarding the course or my instruction skills. To encourage and accommodate feedback, I have created a discussion forum on the class website (Blackboard) that will allow you to make anonymous posts. Please utilize it.

ASM SOCIAL MEDIA

In today's fast-paced, competitive environment, understanding the Accounting industry and staying current on best-practices is necessary for success. We strongly urge students to find a variety of ways to stay up-to-date, including following the Accounting Twitter account at @unm_asm_acctg. The Anderson Acctg Dept Twitter account will provide accounting students with current research, events, and job information in the Accounting industry. Students will also have the opportunity to ask questions regarding the accounting industry and employer expectations, share their expertise, and celebrate achievements in the field. Creating a Twitter account and following the Accounting Department on Twitter is not mandatory and students who choose to interact via this forum should be mindful of their social media interactions.

MGMT 635 COURSE SCHEDULE – SPRING 2016

The following pages contain a **tentative** listing of the daily topics and assignments for the class. IT IS SUBJECT TO CHANGE. **Please monitor Blackboard Learn for changes to the schedule. If you are absent from class, it is your responsibility to learn what material was covered that day.**

Date	Topics	Preparation	Assignment Due
1/21	<i>swirl</i> 's Introduction to R module NO CLASS	Kabacoff 4-5	
1/28	Critical Thinking Business Analytics <ul style="list-style-type: none"> • Descriptive vs. Predictive vs. Prescriptive Decision Making	Provost 1-2 SAS Analytics Levels (PDF)	Learning R Assignment
2/4	Visualization in Tableau	See "Learning Tableau" document on Learn	
2/11	Descriptive Analytics and Plots in R	Kabacoff 6, 7-7.2.1, 11	Tableau Case Study Assignment
2/18	Clustering (k-means)	Provost 6 Mahesh. 9 Foreman 2 Kabacoff 16	Descriptive Analytics Assignment
2/25	Prescriptive Analytics: What-If Analysis Monte Carlo Simulations		Clustering Assignment
3/3	Prescriptive Analytics: Optimization	Foreman 4	Monte Carlo Assignment
3/10	Predictive Analytics – Categorization: Decision Trees	Provost 3 Mahesh. 6 Kabacoff 17.1-3	Optimization Assignment
Th – 3/17 – Spring Break			
3/24	Predictive Analytics – Categorization: Decision Tree and Model Fitting and Model Evaluation	Provost 4-5, 7-8 Kabacoff 17.6	
3/31	Predictive Analytics – Categorization: Logistic Regression	Provost 4 Foreman 6 Kabacoff 13.1-2, 17.2	Decision Trees Assignment

4/7	Predictive Analytics – Value Prediction: Multiple Linear Regression	Provost 4-5, 7-8 Foreman 6 Mahesh. 7 Kabacoff 8.1-2	Logistic Regression Assignment
4/14	Predictive Analytics – Value Prediction: Multiple Regression Model Fitting and Evaluation	Kabacoff 8.3-7	Linear Regression Assignment
4/21	Predictive Analytics – Value Prediction: Forecasting	Foreman 8 Kabacoff 15	
4/28	Final Project Work / Buffer Day		Forecasting Assignment
5/5	Final Project Work / Buffer Day		Data Analytic Methods Research Report Final Project Due 5/6
Final Exam (In Class During Our Final Exam Period)			