Course Syllabus & Schedule

Data Analytics in Business

MGT 6203 Online

Summer 2021

[31 March 2021]

PROFESSORS:
Frederic Bien, PhD, MS.QCF
Email: fvbien@gatech.edu
Office: 496 (or 4161) in Scheller College of Business

Class Time and Location: Online in Canvas and EdX

Office Hours in BlueJeans.com: Wednesdays 8:30-9:30 pm (EDT) for OMSA/Canvas students, and Tuesdays 8:30-9:30 pm for MicroMaster/EdX students, or by appointment.

TEACHING ASSISTANTS:

1. Akshay Gangavalli (Lead TA) (MSQCF)
2. Madhur Adlakha (Assistant Lead TA for OMSA students in Canvas) (MSQCF)
3. Ronak Patel (Assistant Lead TA for Micromaster students in EdX) (OMSA)

Other TAs : TBD

Teaching Assistants are very important to this course, as you will see in our Mondays evenings office hours (7:00-8:00 pm for EdX, or 8:30 to 9:30 pm for Canvas, Eastern). TAs will provide R code instruction and answers in Piazza online forums.

BASED ON LECTURES BY:
Prof. Sridhar Narasimhan (statistics), Prof. Jonathan Clarke (finance), Prof. Bob Myers (logistics) from GeorgiaTech Scheller College of Business

COURSE BRIEF DESCRIPTION

The primary objective of this course is to teach the scientific process of transforming data into insights for making better business decisions.

This course covers *basic methodologies, algorithms, and challenges* related to analyzing business data. We will also study *applications of data analysis* in:

*****This is subject to change during the semester to adapt to needs of instruction.*****

1) Finance & Investments
2) Marketing & Advertising
3) Operations & Logistics.

PREREQUISITE

- Calculus and Linear Algebra
- Probability and Statistics
- Background in programming and willingness to learn R
- Introductory course in Analytics Modeling

COURSE GOALS

After taking this course, students will be able to:

- approach business problems data-analytically. Students should be able to think carefully and systematically about whether and how data and business analytics can improve business performance.
- develop business analytics ideas, start projects to analyze data using business analytics software, and generate relevant business insights for decision-making.

TEXTBOOKS

- Required: (ISLR) *Introduction to Statistical Learning with Applications in R*, by Gareth James, Daniela Witten, Trevor Hastie & Robert Tibshirani. Publ. Springer, New York (2017). ISBN: 978-1461471370. Download it for free at www.statlearning.com Purchase in paper form at Amazon.com, BN.com, Ebay…

- You will need to purchase and download seven case studies from Harvard Business School online library. Here is a link to a package to buy online: https://hbsp.harvard.edu/import/818511

- Not required, but a good business book to read: *Data Science for Business: What you need to know about data mining and data analytic thinking,* Foster Provost & Tom Fawcett, Publisher: O'Reilly Media (2013). ISBN-13: 978-1449361327. You can get it from Amazon, BN.com, EBay…

- Not required; suggested technical book: *Data Mining for Business Analytics: Concepts, Techniques, and Applications in R,* by Galit Shmueli, Peter C. Bruce, Inbal Yahav, Nitin R. Patel, Kenneth C. Lichtendahl Jr., Publisher: Wiley, Hoboken, NJ (2018). ISBN: 978-1118879368. Available for purchase from Amazon.com, BN.com, Ebay.com, etc. See also the website for this book: www.dataminingbook.com/book/r-edition

COURSE DESCRIPTION

Today businesses, consumers, communities and societies create or manage massive amounts of data as a by-product of their activities. Companies in every industry are using

data analytics to add to, or replace, intuition and guesswork in their decision-making. As a result, business managers can use their data troves and analytical skills to discover new patterns and insights, and/or to run controlled experiments to test various hypotheses.

This course prepares students to understand business analytics and become leaders in these areas in business organizations. This course teaches the scientific process of transforming data into insights for making better business decisions. It covers the methodologies, issues, and challenges related to analyzing business data.

This course will illustrate key processes of analytics by allowing students to apply business analytics algorithms and methodologies to various business problems. (Data collection and definition are also critical steps for understanding of phenomena and predictions. We won't have time to discuss data collection in this course unfortunately.)

The use of carefully selected examples places business analytics techniques in context and teaches students how to avoid the common pitfalls, emphasizing the importance of applying proper business analytics techniques. The course will also show that often there can be more than one "good answer" or one "good choice". We need to be discerning in the type of data that we choose to analyze and how we analyze it.

HARDWARE REQUIREMENTS

Please follow GeorgiaTech's computer ownership guide at http://sco.gatech.edu/.
Make sure that you have admin rights on your laptop since occasionally you will need to install R, RStudio, many packages in R, and other software like Radiant, maybe Gephi. Note that tablets, Chromebooks, and old laptops may not work well for this class at this time. (As we move the course toward use of R notebooks, eventually they will work.)

SOFTWARE REQUIREMENTS

We will be learning business analytics with the help of open-source and free software applications that are provided for educational use. Please follow instructions provided in their respective websites and install the following software in your personal laptop:

a. R: https://www.r-project.org/
b. RStudio: https://www.rstudio.com/

There are many resources on how to learn R. We will discuss some in the course.

- *R for Datascience:* http://r4ds.had.co.nz/
- *RStudio Education:* https://education.rstudio.com/
- *Swirl:* www.SwirlStats.com
- *DataCamp:* www.DataCamp.com/courses/free-introduction-to-r

c. We'll also introduce Radiant: https://radiant-rstats.github.io/docs/install.html - a convenient and free user interface to analytics and basic programming in R.

The instructions for installing R, RStudio, and Radiant on a MacBook Pro. Here are the steps:

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Download and run the R installer: https://cloud.r-project.org/bin/macosx/base/R-release.pkg
Download and run the RStudio installer:
https://rstudio.com/products/rstudio/download/#download
Open RStudio.
At the prompt, enter **exactly** this:
`install.packages("radiant")`
Wait for the install to complete.
In the top bar, select **Tools → Addins → Browse Addins...**
Click **Radiant**
When prompted, opt in to install additional packages.
Radiant should open in a new tab in your default browser

COMMUNICATION

Instructor/TA Communication: All course announcements will be made via Canvas or EdX. You are expected to check Canvas/EdX a few times per week for important course-related information. By following the instructions provided in Canvas/EdX, you can ensure that you do not miss important instructions, announcements, etc. If you want, you can adjust your Canvas/EdX account settings to receive important information directly to your email account or cellphone. To get started, log into the Canvas/EdX, click on this course, and see the section entitled *"Before You Begin: Instructions for Getting Started."*

Content Questions and Help: Because questions can often be addressed for the good of the group, please do not email your questions directly to the instructor. Instead, course and content questions will be addressed on an online chat platform called Piazza.com.

Get an account in Piazza today. These online forums will be a VERY valuable source of information and hints about the course and problem sets. Note that you can set your post to "Private" to ask questions to the instructor and TA about issues unique to you.

Office Hours. Office hours will be conducted every week by the instructor and TAs. These sessions will be both an opportunity for you to ask questions and the TAs may discuss course logistics and content. Not all sessions may not be recorded. The ones that are recorded will be available via Canvas or via links posted in Piazza (for EdX students).

Please note that many students see great benefits for this course in attending online office hours via videoconference. Monday evenings office hours are taught mainly by our TAs, who are particularly helpful to learn programming skills.

Office hours with the course instructor/professor (on Tuesday or Thursday, depending if you are an EdX student or OMSA student) are focused on discussing business ideas and additional material for the course; also to go over topics covered in the video lectures.

These videoconferences are part of the course. You've already paid for them with your tuition. We recommend you try to attend them as often as you can and PARTICIPATE.

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You can learn faster by being an active participant in online office hours and in Piazza online forums… You can attend them silently without sharing audio & video.

STUDENT EFFORT

Students are expected to devote about 10 to 12 hours per week of studying time to complete this course requirements. (That's about 1.5 to 2 hours per day!) This guideline encompasses all class activities, including reading the textbook and supplementary resources, watching lesson videos, participating in office hours and forum discussions, completing homework assignments, and studying for exams. Of course, students can spend as much time as necessary, but it is important to be careful not to fall behind.

HOMEWORK ASSIGNMENTS, EXAMS AND GRADING

Grades will be assigned on the following basis:

Ten Self-Assessment Quizzes (1.5% each. The first SA 0 does not count toward your course grade.)	15%
Three Homework Assignments (first two at 10% each and third one at 15%)	35%
Midterm Exam – Theory Part 1	8%
Midterm Exam – Computation Part 2	12%
Final Exam – Theory Part 1	10%
Final Exam – Computation Part 2	20%

Typically, the following grading scale will be used in the course:

- 90 – 100%: A
- 80 – 89%: B
- 70 – 79%: C
- 60 – 69%: D
- 0 – 59%: F

Scores will be rounded to the nearest integer. Please note that 80 – 89.49% yields a B, and a total score of 89.50% would round to 90% and get an A, while anything less than 89.5 yet more than 89 will still get a B. Similar rounding applies for the other grades.

Additional curving of the grades may be possible, depending how the course progresses and based on the disparity of test questions and students during this semester.

COURSE SCHEDULE

*****This is subject to change during the semester to adapt to needs of instruction.*****

Please refer to the **Course Schedule** (a separate document) for week by week details. See also postings in Canvas for GeorgiaTech students and in EdX for MicroMasters students.

READINGS

The assigned pre-readings are crucial to your success in this course. Exams may include some material in readings that are not covered in the in-class lessons. Moreover, watching the video lessons alone will not sufficiently prepare you for the exams.

Coding takes practice. It is a bit like a sport, and **you** must practice! Try the programming exercises provided in lecture slides and in R Labs. Do the homework and online quizzes.

LESSONS

Video lessons for this course will be hosted in Canvas for OMSA students and in edX for MicroMaster students.

ASSIGNMENTS

There will be three individual assignments to be submitted. Each assignment will have a theory part 1, and computation part 2. The first two assignments are worth 10% of the overall course grade, the third assignment is worth 15% of the overall course grade.

Theory part 1 of each assignment will be worth 40% of that assignment's score, and Computation part 2 will be worth 60% of that assignment's score.

(The raw points for each assignment may vary. One assignment could have a total of 100 points and another a total of 20 points, but both carry the weights indicated in this syllabus, as far as the overall course total score is concerned.)

You will have two weeks to work on the first two assignments, and three weeks on the third one. Each assignment should be **submitted on Canvas for GT students/EdX for MicroMasters students by Wednesday at 11:59 pm EST on the days noted in the Course Schedule**. Each assignment must be submitted **no later than the deadline**.

Submission after this time (regardless of whether it is by minutes, hours or days) will received a score discount, unless you have exceptional circumstances that our TAs were made aware of beforehand, and you were granted in advance in writing a postponement.

Students are responsible for making sure that their individual assignments are submitted in a timely manner according to the course guidelines. Homework assignments will be released two weekends in advance, giving students opportunities to browse the assignment and organize their week and weekend's plans accordingly. It's important to turn your homework on time for peer-grading; see below.

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Students will have plenty of opportunity to ask questions in advance of the due dates to the TAs. Please participate in online discussions in our Piazza.com forums. You are encouraged to participate, both to ask questions and to answers other students' questions.

Office hours will be scheduled every week on Monday evenings with TAs, and Tuesday or Thursday evenings with the instructor, to address your questions about the course and its assignments. During these "office hours", we will also answer any open questions.

PEER-GRADED HOMEWORK

Most of the work in this course, incl. homeworks, will be due on Wednesday evenings. The theory part of each assignment will be auto-graded via multiple choice questions.

The computational part of the three homework assignments will be peer-graded. This means that you will have to look at the work of three randomly assigned students, and your review will yield a grade for their work. The median of the three grades received on a homework will be assigned as the student's grade for that homework.

You will have five and a half days, from Friday morning till next Wednesday evening, to perform your peer-grading task. You must review carefully your classmates work. This process is part of the learning in this course: *to understand how other people solve or did not solve questions* asked in this course, and *to express your opinions on their work.*

You must turn in your three reviews on time. Your homework assignment will be penalized by a point discount if you do not turn in your peer reviews on time. The penalty is 30% of the grade for your own homework; it is automatically debited by our platform. Please be aware of this.

Peer-grading adds work to the students, and it also adds a lot of learning. You'll get to see other ways of thinking about problems, coding them and presenting them. It can feel a bit annoying, yet it helps your learning and trains you to become a data analytics *manager* later on – managers have to be able to review other people's work.

Midterm Exam and Final Exam will require you to "knit your R code" and submit an "R markdown PDF file". We will show you how to do this in the course. You can also read ahead at https://rmarkdown.rstudio.com/authoring_quick_tour.html

We will use **Vocareum** for the computational parts of our three homework assignments. It helps standardize coding and grading by providing a cloud-based environment for programming in R, and it allows to run easily other people's code during reviews. This platform is based on the concept of *Jupyter Notebooks*. Some of you may have already used it in other GeorgiaTech courses. If not, no worry - you'll learn it here.

QUIZZES / SELF-ASSESSMENTS

*****This is subject to change during the semester to adapt to needs of instruction.*****

There will be ten Self-Assessments or quizzes that will be graded. These "SAs" will be worth each 1.5% of your grade, for a total of 15% of your course grade.

These quizzes will be given in Canvas for GT Students and EdX for MicroMasters students. You will have the opportunity **to take them twice (2x) only** if you wish to improve your scores. Be sure to write down your incorrect answers to not repeat them.

One of the early Self-Assessments may be peer-graded to give you a chance to learn and practice your peer-grading skills.

EXAMS

The Midterm Exam will account for 20% of your course grade. The Final Exam will account for 30% of your overall course grade.

The Midterm Exam will cover Weeks 1 through 6 of the course. The Final Exam will be cumulative in scope and cover all of the course materials. The exams will cover concepts discussed in the readings, the lectures, and in the homework assignments.

Theory part 1 of each exam will be comprised of multiple-choice questions. Exams will be strictly-timed with proctoring software. No open books, notes, web browsers, or similar resources are allowed, unless otherwise stated by your professor. The use of mobile phones and tablet devices is also prohibited. The questions will be mostly theoretical.

Computation part 2 of each exam will be comprised of application questions that require the use of R. In addition to answering multiple-choice questions in Part 2, you will have to upload your R code as a "knitted R markdown file" in PDF format.

The midterm and final exams must be **submitted on Canvas for GT students/EdX for MicroMasters students by 11:59 pm EST on the days noted in the course schedule**. Any submission after this time (regardless of whether it is by minutes, hours, or days) will not be accepted. There is no flexible period for taking the exams. If you have to work or travel on days an exam is due, please arrange to complete your work early. **It is the student's responsibility to monitor their time and allow enough time to submit their exam before time is up.**

PLAGIARISM

Plagiarism is considered a serious offense. You are not allowed to copy and paste or submit materials created or published by others, as if you created the materials. All materials submitted and posted must be your own original work.

STUDENT HONOR CODE

*****This is subject to change during the semester to adapt to needs of instruction.*****

You are responsible for completing your own work. All students are expected and required to abide by the *letter* and the *spirit* of the Georgia Tech Honor Code. The teaching assistants and I will also abide by these honor codes. I am very serious about this expectation because ethical behavior is extremely important in all facets of life.

To review the Georgia Tech Honor Code, please visit http://osi.gatech.edu/content/honor-code . Any OMS Analytics degree student suspected of behavior in violation of the Georgia Tech Honor Code will be referred to Georgia Tech's Office of Student Integrity. Please see also the GeorgiaTech Honor Advisory Council: http://www.honor.gatech.edu.

Students with Learning Differences:
This course offers accommodations to students with learning differences. If you need an online classroom accommodation, please contact GeorgiaTech's ADAPTS office at http://www.adapts.gatech.edu and let us know about your need and accommodation.

General Comments

- The Modules of this course follow a logical sequence
- You are responsible for completing your own work.
- Graded assignments should be completed by their due dates
- Self-Assessment tests must be completed within the time allotted

Attendance Policy

- Attendance in online office hours is not required, but it is recommended. You will learn better by being present, participating, and your questions in office hours could help other students learn better.
- Log in regularly into Canvas/EdX to check what's new and complete your work, and so you do not have to spend a lot of time reviewing and refreshing yourself regarding the content.

Communication

- All students can and should ask questions. Online you can also all answer your fellow learners' questions in the course discussion forums. Often, discussions with fellow learners are the sources of key pieces of learning.

Netiquette

- Netiquette refers to etiquette that is used when communicating on the Internet. Review the Core Rules of Netiquette. When you are communicating via email, discussion forums or synchronously (real-time), please use correct spelling, punctuation and grammar consistent with the academic environment and scholarship.

- Conner, P. (2006-2014). Ground Rules for Online Discussions, Retrieved 4/21/2014 from http://teaching.colostate.edu/tips/tip.cfm?tipid=128

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- Learners who do not adhere to this guideline may be removed from the course.

INTELLECTUAL PROPERTY AND CONFIDENTIALITY

We highly recommend that you avoid disclosing any confidential information in your assignments and discussion forum posts (including intellectual property and "third party" confidential information, such as information in relation to your employer that is not publicly available).

Although you are encouraged to draw on real-world experience, posting material or sharing links to material that is harassing, intimidating, or defamatory, or encourages or condones piracy or infringes on intellectual property rights is not appropriate. GeorgiaTech reserves the right to remove any postings that contravene the well-being of other students or goes against accepted integrity standards.

We would urge you to use only first names (or pseudonyms) wherever possible. You are entirely responsible for ensuring that you do not disclose any information that is protected by confidentiality undertakings – we will ensure that all information is treated in accordance with our privacy policy, but we will not sign any separate confidentiality agreements or non-disclosure agreements.

If, during the program, you disclose or create any intellectual property (for example, trading names, designs, written materials, know-how and other products of your independent thought, creativity and intellectual effort), then you accept all and any risks in relation to disclosure, including the risk that a fellow participant will use this intellectual property without your consent, or that disclosure weakens or erases any legal protections.

We won't use any intellectual property created by you and submitted in, or forming part of, your assignments without your written consent.

Our discussion forums operate on the basis of the **Chatham House Rule**: *"Participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed."* Please ensure that you take account of this Rule when posting on the discussion forum and using information learnt from discussion forum posts. https://www.chathamhouse.org/chatham-house-rule

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Data Analysis in Business (MGT 6203)

Course Outline - Summer 2021

Course Outline subject to change during the semester to adapt to needs of instruction.

Weeks	Course Topics	Release Dates (All dates on Friday except where noted)
	Section 1: Statistical Learning (Weeks 1-4)	
Week 1	Linear Regression: Simple and Multiple. R Code Programming. Real Estate Example.	Monday 17 May 2021
Week 2	Indicator Variables and Interaction Terms. Nonlinear Transformations and Log Models. Customer Analytics Example.	24 May
Week 3	Logistic Regression. Customer Default Example	31 May
Week 4	Treatment Effect, Randomized Controlled Experiments, and Natural Experiments.	7 June
	Section 2: Finance (Weeks 5-6)	
Week 5	Measuring Returns and Risk. Measuring Risk Adjusted Performance.	14 June
Week 6	Factor Investing and Portfolio Management	21 June
	Midterm Exam: Parts 1 & 2 due on Saturday 3 July	Opens Fri 25 June. Due Saturday 3 July at 12 midnight (23:59 Eastern)
	Section 3: Marketing (Weeks 7-9)	
Week 7	Marketing & Advertising : Traditional and Digital	28 June
Week 8	Implementing Integrated Digital Marketing	5 July
	Section 4: Operation Management (Weeks 9-11)	
Week 9	Predictive Marketing Across Channels. Introduction to Logistics and Managing Queues	12 July
Week 10	Statistical Process Control. Forecasting Demand	19 July
Week 11	Inventory Management (Last 2 days of classes, then Reading Period)	26-27 July
Week 12	**Final Exam: Parts 1 & 2 due on Wed 4 August**	Due Thu 4 Aug 2021 at midnight (23:59 Eastern)

*****This is subject to change during the semester to adapt to needs of instruction.*****

Data Analysis in Business (MGT 6203)

Assignment Release and Due Dates – Summer 2021

***Course Outline subject to change during the semester to adapt to needs of instruction. ***

All times are in Eastern Daylight Time (USA)

Week	Activity	Assignment		Peer Assessment	
		Release Date	Due Date	Release Date	Due Date
Week 1	Self-Assessment 0	Mon May 17	Fri May 21		
	Self-Assessment 1	Fri May 21 @ 8:00 am	Wed May 26 @ 23:59		
Week 2	Self-Assessment 2	Fri May 28 @ 8:00 am	Wed Jun 2 @ 23:59		
	Graded Homework #1	Fri May 28 @ 5:00 pm	Wed Jun 9 @ 23:59	Fri Jun 11 @ 8:00 am	Mon Jun 14 @ 23:59
Week 3	Self-Assessment 3	Fri Jun 4 @ 8:00 am	Wed Jun 9 @ 23:59		
Week 4	Self-Assessment 4	Fri Jun 11 @ 8:00 am	Wed Jun 16 @ 23:59		
	Graded Homework #2	Fri Jun 11 @ 5:00 pm	Wed Jun 23 @ 23:59	Fri Jun 25 @ 8:00 am	Mon June 28 @ 23:59
Week 5	Self-Assessment 5	Fri Jun 18 @ 8:00 am	Wed Jun 23 @ 23:59		
Week 6	**Midterm Exam**	Fri Jun 25 @ 5:00 pm	Sat July 3 @ 23:59		
Week 7	Self-Assessment 6	Fri Jul 2 @ 8:00 am	Wed Jul 7 @ 23:59		
Week 8	Self-Assessment 7	Fri Jul 9 @ 8:00 am	Wed Jul 14@ 23:59		
	Graded Homework #3	Fri July 9 @ 5:00 pm	Wed Jul 21 @ 23:59	Fri Jul 23 @ 8:00 am	Mon Jul 26 @ 23:59
	Self-Assessment 8	Fri Jul 16 @ 8:00am	Wed Jul 21 @ 23:59		
Week 10	Self-Assessment 9	Mon Jul 19 @ 8:00am	Sat Jul 24 @ 23:59		
	Self-Assessment 10	Thu Jul 22 @ 8:00am	Tue Jul 27 @ 23:59		
Week 11-12	Final Exam	Wed Jul 28 @ 8:00 am	Wed Aug 4 @ 23:59		

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Data Analytics in Business : MGT6203 - Course Schedule - Summer 2021 *(updated 31 March)*

Week/Topic	Release Dates	Weekly Topic	Course Activities	Due Dates
Section 1: Statistical Learning (Weeks 1-4)				
Week 0: Sat 15 May 2021	Fri 14 May 2021 8:00 am EST = 12:00 UTC	Install and Learn the basics of programming in R	Read: ISLR, Sections 2.1, 2.3. Practice exercises TASK: *Ungraded* Self-Assessment (SA) #0 opens Mon 17 May at 5:00 pm	
Week 1: Mon 17 May 2021	Sat 15 May 2021 8:00 am EST = 12:00 UTC	Linear Regression & Real Estate Example	Read: ISLR, Sections 3.1, 3.2 TASK: *Graded* Self-Assessment (SA) #1 opens Fri 21 May at 8:00 am	SA 0 due Fri 21 May at midnight (23:59 EST)
Week 2: Mon 24 May	Fri 21 May 2021 8:00 am EST = 12:00 UTC	Indicator Variables, Interaction Terms . Nonlinear Transformation Models	Read: ISLR, Section 3.3 Interpreting Nonlinear Models (click on this link) TASK: Self-Assessment 2 opens Fri 28 May at 8 am TASK: *Graded* Homework 1 opens on Fri 28 May at 5 pm. (Part 1 in usual platform. Part 2 : go to Vocareum)	SA 1 due Wed 26 May at midnight (23:59 EST)
Week 3: Mon 31 May	Fri 28 May 2021 8:00 am EST = 12:00 UTC	Logistic Regression. Customer Default example	ISLR, Section 4.3 TASK: Self-Assessment 3 opens Fri 4 June at 8 am	SA 2 due Wed 2 June at midnight (23:59 EST)

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Week 4: Mon 7 June	Fri 4 June 2021 8:00 am EST = 12:00 UTC	Treatment Effect, Randomized Controlled Experiments, and Natural Experiments	Difference in Difference Estimation TASK: Self-Assessment 4 opens Fri 11 June at 8 am TASK: Graded Homework 2 opens Fri 11 Jun at 5 pm (Part 1 in usual platform. Part 2 : go to edX, then to Vocareum)	SA 3 due Wed 9 June at midnight (23:59 EST) Graded Homework #1 (Parts 1 & 2) due Wed 9 June at 23:59 EST
Section 2: Finance (Weeks 5-6)				
Week 5: Mon 14 June	Fri 11 June 2021 8:00 am EST = 12:00 UTC	Measuring Returns and Risk. Measuring Risk Adjusted Performance	Read: Warren Buffett risk and return case TASK: Self-Assessment 5 opens Fri 18 Jun at 8 am Read: Assessing Buffett's Alpha or this technical paper Buffet's Alpha.	Peer-grading of Homework #1 due on Mon 14 June at midnight SA 4 due Wed 16 June at midnight (23:59 EST)
Week 6: Mon 21 June	Fri 18 June 2021 8:00 am EST = 12:00 UTC	Factor Investing	Read: The Greatest Factor Investor of All Times? See these explanatory slides, and rebuke of the original article. Think about: What drives Warren Buffett's alpha? TASK: Peer-grading Hwk 2 starts Fri 12 April 8 am	SA 5 due on Wed 23 June at midnight (23:59 EST)

*****This is subject to change during the semester to adapt to needs of instruction.*****

Midterm Exam (June 25 - July 3)				
Week 7: Mon 28 June	Midterm opens on Fri 25 June 2021 5:00 pm EST = 21:00 UTC	Test on the first 6 weeks of material	Part 1: theoretical, is proctored; 3-hour limit Part 2: computational, is open books, start & stop ok	Peer-grading of Homework #2 due on Mon 28 June at midnight **Midterm Exam** Parts 1 & 2 due **Saturday** 3 July at midnight (23:59 EST)
Section 3: Marketing (Weeks 7-8)				
Week 7: Mon 28 June	Fri 25 June 2021 8:00 am EST = 12:00 UTC	Marketing and Advertising. Implementing Integrated Digital Marketing	TASK: Self-Assessment 6 opens Fri 2 July at 8 am Read: (from Course Pack) Advertising Experiments at the Ohio Art Company Read: (from Course Pack) Star Digital: Assessing the Effectiveness of Display Advertising	(Midterm is due July 3) No other deliverable due
Week 8: Mon 5 July	Fri 2 July 2021 8:00 am EST = 12:00 UTC	Implementing Predictive Marketing Across Channels	Read: (from Course Pack) Chase Sapphire: Creating a Millennial Cult Brand TASK: Homework 3 opens Fri 9 July at 5 pm EST (Part 1 in usual platform. Part 2 : go to Vocareum) TASK: Self-assessment 7 opens Fri 9 July at 5 pm **TASK: Self-assessment 8 opens Fri 16 July at 5 pm**	SA 6 due same day Wed 7 July at 23:59 EST

*****This is subject to change during the semester to adapt to needs of instruction.*****

Module 4: Operation Management (Weeks 9-11)

Week 9: Mon 12 July	Fri 9 July 2021 at 8:00 pm EST = 12:00 UTC	Introduction and Managing Queues. Statistical Process Control	(Course Pack) Read: Statistical Process Control Read: The Supply Chain Economy and the Future of Good Jobs in America. (click on link)	SA 7 due Wed 14 July at 23:59 EST
Week 10: Mon 19 July	Fri 16 July 2021 8:00 am EST = 12:00 UTC	Forecasting Demand.	(Course Pack): Operations Management Reading: Managing Queues (Course Pack): Time Series TASK: Self-Assessment 9 opens Mon 19 July at 8 am TASK: Self-Assessment 10 opens Thu 22 July at 8 am	SA 8 due same day Wed 21 July at 23:59 EST. Homework #3 due Wed 21 July at midnight (23:59 EST) SA 9 due the same week Sat 24 July at 23:59 EST.

*****This is subject to change during the semester to adapt to needs of instruction.*****

Week 11: Mon 26 July	Fri 23 July 2021 8:00 am EST = 12:00 UTC	Inventory Management	(Course Pack): Managing Inventories--Reorder Point System	Peer-grading of Homework #3 due on Mon 26 July at midnight SA 10 due Tue 27 July at 23:59 EST
Official GeorgiaTech Reading Period: Wed 28 July (use it to review all the course material) **Final Exam**				
Week 12: Mon 2 August	Opens Wednesday 28 July 2021 at 8:00 am EST = 12:00 UTC	Cumulative Test (theory & practice) based on the whole course material	About 1/3 of the questions will be on material from before the midterm, and 2/3 of the questions will be from after the midterm.	**Final Exam** due Wed 4 August 2021 at midnight (23:59 EST)

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