# MGT 6203 Data Analytics in Business

## Spring 2015

Scheller College of Business, Georgia Institute of Technology

***PROFESSOR***

**Yu “Jeffrey” Hu**

**Room:** COB 478

**Phone:** 404-894-6696

##### **Email:** [yuhu@gatech.edu](mailto:yuhu@gatech.edu) (the best contact method)

**Office Hours:** TBA

***CLASS INFORMATION***

**Classroom:** COB 223 and Trading Floor

##### **Class Time:** Tuesday/Thursday 9:35-10:55am (Section TSH); Tuesday/Thursday 12:05-1:25pm (Section TSJ)

**Class Website:** TSquare

***TEACHING ASSISTANT***

**Karthik Nattamai Kannan**

**Room:** COB 4277

**Phone:** 404-385-2642

##### **Email:** [kbnk@gatech.edu](mailto:kbnk@gatech.edu) (the best contact method)

**Office Hours:** TBA

***COURSE DESCRIPTION***

##### Today, businesses, consumers, and societies leave behind massive amounts of data as a by-product of their activities. Leading-edge companies in every industry are using analytics to replace intuition and guesswork in their decision-making. As a result, managers are collecting and analyzing enormous data sets to discover new patterns and insights and running controlled experiments to test hypotheses.

This course prepares students to understand big data and 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, algorithms, issues, and challenges related to analyzing business data. It will illustrate the processes of analytics by allowing students to apply business analytics algorithms and methodologies to real-world business datasets from finance, marketing, and operations. The use of real-world examples and cases places business analytics techniques in context and teaches students how to avoid the common pitfalls, emphasizing the importance of applying proper business analytics techniques. In addition to cases, this course features hands-on experiences with data collection using Python programs and analytics software such as SAS.

***LEARNING OBJECTIVES***

##### After taking this course, students should 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.

Students should be able to develop and execute business analytics projects within business organizations. Students should be able to form business analytics ideas, collect data from various sources, analyze data using business analytics software, and generate predictions and business insights.

Students should also be able to interact intelligently on the topic of business analytics with CIOs, business managers, and data scientists.

***COURSE NORMS AND EXPECTATIONS***

##### We use a variety of lectures, lab sessions, cases, and in-class discussions in this course, and as such, it is crucial to appreciate that students in the class are co-producers of class discussions and collective learning. For this to happen, class members need to listen carefully to one another and build on or critique prior comments. Discussions need to stay on track, and it is the responsibility of the faculty and students to collectively accomplish this. The discussion should be a conversation in which all participants recognize that they have an obligation to advance our understanding of the issue at hand. Your contributions to this learning process will be appraised in addition to the content of what you contribute.

Because this course relies heavily on class participation for its success, class norms and expectations regarding class behavior are very important:

1. **Attendance at every class is required**. Please schedule other activities at times other than when this class meets. Please arrive on time and stay from the beginning of class to the end. If you must miss a class, please advise the instructor in advance. If you are unable to attend a class, it is your responsibility to find out from your classmates what materials were covered, what items were distributed in class, and what key points were collectively advanced.
2. Please come to class prepared to discuss the readings. In every class, I may "cold call" students whose hands are not raised. If something has prevented you from being prepared for class that day, you should let the instructor know before the start of class. The primary reading assignments are mentioned in the course schedule. Other readings assignments, if any, will be posted on the course website, and or distributed in class. You are responsible for checking the course website before every class for announcements, assignments and schedule changes.
3. During class sessions, please **turn off mobile phones** or put them on vibration for emergencies. Please **turn off laptops and tablet devices**.

##### There are a few lab sessions. We will meet in the Trading Floor for those lab sessions. I will let you know beforehand the time of such lab sessions.

1. Please bring your name card and sit in the same seat for each class. This will make it easier for me to get to know you and to make sure you get appropriate credit for your contributions.

***ASSIGNMENTS AND GRADING***

##### Grades will be assigned on the following basis: Class Participation 10%

Individual Assignments 20%

Team Project 30%

Midterm Exam 1 20%

Midterm Exam 2 20%

* 1. ***Exam***

There are two midterm exams. The exams will be closed books and closed notes. The use of mobile phones / tablet devices / laptops is prohibited. Students will not be allowed to take a make-up exam, except in special circumstances previously approved by the instructor. The instructor has the sole right to make determinations concerning the potential for make-up exams.

* 1. ***Individual Assignments***

There are five individual assignments. Detailed explanations of each assignment will be posted on TSquare. Each assignment must be submitted **no later than class time** on the day it is due. Any submission after class time (regardless of whether it is minutes, hours, or days) will not be accepted. There is **NO GRACE PERIOD** for the submission of team assignments. **Students** are responsible for making sure that individual assignments are submitted in a timely manner according to the course guidelines. Each assignment should be **submitted on TSquare**.

* 1. ***Projects***

There is one team project. Detailed explanations of the project will be posted on the class website. Students will substantially contribute to the completion of the team project in this course. The project gives students an opportunity to creatively think how the knowledge learned in this class can be applied to a real analytics problem in business.

The team project includes two deliverables – a short paper and a presentation. The presentation and the short paper must be submitted **no later than class time** on the day it is due. Any submission after that time (regardless of whether it is minutes, hours, or days) will not be accepted. There is **NO GRACE PERIOD** for the submission of team projects. **ALL** members of the team are responsible for making sure that team projects are submitted in a timely manner according to the course guidelines. The presentation and the short paper should be **submitted on TSquare**. A **PEER EVALUATION** component will be used to add or deduct points as needed, based upon teammates’ evaluation of your work.

* 1. ***Attendance and Class Participation***

Students are expected to attend all class sessions. Class sessions provide useful information – both for understanding the topics and cases covered in the course and for working on hands-on exercises.

Reading materials alone may not prove to be sufficient for one to do well in the course. The instructor may “ cold call” individual students in class. Participation may be gauged in a number of ways including direct input into class discussion by a student, in-class activities that show understanding, and input into the material coverage, etc. Activities such as **missing classes, sleeping in class, coming to class late or leaving early without advance notice, reading newspapers, using mobile phones / table devices / laptops, doing non-class-related work, classroom disruptions**, etc. will adversely affect the participation grade. **Quality is as important as quantity**, when I assign participation grades. I will make notes on participation at the end of each class and assign grades at the end of the semester based on these notes.

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| --- | --- |
| Rating | Explanation |
| 0 | Student was absent from class (even if excused) |
| 1 | Student was present in class, but was not adequately prepared (regardless of level of participation) or made no valuable contributions to the class (e.g., re-stated others’ comments, made long rambling statements without a clear point, etc.) |
| 2 | Student was active in class, well-prepared, and made outstanding contributions (e.g., introduced valuable ideas or made particularly insightful observations) |

***TEXTBOOKS***

##### **Required 1**: (MC) Big Data: A Revolution That Will Transform How We Live, Work, and Think. Viktor Mayer-Schönberger, Kenneth Cukier. Published by Houghton Mifflin Harcourt. 2013. (You can purchase a hardcover or paperback or Kindle version.)

ISBN: 978-0544002692 (hardcover), 978-0544227750 (paperback)

**Required 2**: (HGL) Principles of Econometrics. R. Carter Hill, William E. Griffiths, Guay C. Lim. Published by Wiley. 2011. (You can purchase or rent a hardcover or Kindle version.)

ISBN: 978-0470626733

**Strongly Recommended 3**: (SD) The Little SAS Book for Enterprise Guide 4.2. Susan J. Slaughter, Lora D. Delwiche. Published by SAS Institute. 2010. (You can purchase or rent a paperback or Kindle version.)

ISBN: 978-1599947266

**Additional readings will be posted on TSquare or sent via emails.** Students are expected to read all the readings and be prepared for in-class discussions.

***TENTATIVE CLASS SCHEDULE (SUBJECT TO CHANGE)***

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| --- | --- | --- |
| **Date** | **Topic** | **Items Due** |
| Jan 6 | Introduction and Definition |  |
| Jan 8 | Sources of Big Data | Team Formation Due |
| Jan 13 | Skills and Process of Big Data Analytics |  |
| Jan 15 | Competing on Big Data Analytics | Assignment 1 |
| Jan 20 | Value of Big Data Analytics |  |
| Jan 22 | Data Types and Summary Reports |  |
| Jan 27 | Simple Graphs |  |
| Jan 29 | Linear Regression | Assignment 2 Due |
| Feb 3 | Non-linear Models |  |
| Feb 5 | Indicator Variable and Interaction Term |  |
| Feb 10 | **Midterm Exam 1** |  |
| Feb 12 | Panel Data 1 |  |
| Feb 17 | Panel Data 2 | Assignment 3 Due |
| Feb 19 | Logit Model 1 |  |
| Feb 24 | Logit Model 2 |  |
| Feb 26 | Count Data |  |
| Mar 3 | Treatment Effect | Assignment 4 Due |
| Mar 5 | Challenges and Issues in Big Data Analytics (1) |  |
| Mar 10 | Challenges and Issues in Big Data Analytics (2) |  |
| Mar 12 | **Midterm Exam 2** | Project Midterm Report Due |
| Mar 17 | Spring Break |  |
| Mar 19 | Spring Break |  |
| Mar 24 | Social Media Analytics |  |
| Mar 26 | Textual Analysis | Assignment 5 Due |
| Mar 31 | Marketing Analytics |  |
| Apr 2 | Analytics in Telecom |  |
| Apr 7 | Analytics in CPG |  |
| Apr 9 | Analytics in Retail |  |
| Apr 14 | Future of Big Data Analytics |  |
| Apr 16, 21, 23 | Student Presentations | Project Report Due |