Georgia Institute of Technology

Scheller College of Business

MGT 6500 B: Analytical Tools for Decisions

**Tuesday/Thursday, 12:30-1:45pm, CoB TBD**

**Fall 2026**

**Instructor**: Koushyar Rajavi

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When sending an email, please write "MGT6500B" at the beginning of your email subject

**Office hours**: Fridays, 3:30-4:45pm (15-minute Zoom appointments; if you need to meet me in-person, please email me and we will find a suitable time to meet in-person)

**TA**: TBD

**TA Review Sessions:** Some Fridays from 10:00 to 11:00 (exact classroom will be communicated before each meeting), from Aug 29th to Oct 3rd

Course Material:

(1) [*Not required*] Business Analytics: Data Analysis & Decision Making, Loose-Leaf Version, 6th + MindTap® Business Statistics, 2 terms (12 months) Printed Access Card, ISBN 9781337358446 Z 5/9/2016 BP, S. Christian Albright and Wayne L. Winston

(2) Notes and files provided by the instructor

(3) (R, RStudio) and Radiant which can be downloaded for free from https://radiant-rstats.github.io/docs/install.html

**Course Description and Objectives**

Several common statistical tools for the analysis of data will be covered, including descriptive statistics, probability concepts, sampling and estimation, hypothesis testing, and regression. The knowledge of these statistical tools enables the decision maker to make informed decisions based on the data available. Specifically, the objectives of this course can be summarized below:

1. To develop the ability to analyze, manipulate, summarize, and present data arising in managerial decision making;
2. To understand the nature and role of uncertainty in making decisions based on data;
3. To develop, implement and test models of data in order to support the decision making process and to validate various decisions.

The instructional approach will stress application rather than theory. While necessary theoretical knowledge will need to be covered for the grounding of the fundamental concepts, the emphasis will clearly be on the application and use of these concepts. This is not a course in mathematics, although mathematics is used in the course as the language for formally defining models and as means of finding solutions. The requirements for particular mathematical operations should be within your capabilities, the most important of which is the ability to deal with abstract symbols and relationships (algebra).

**MGT 6500: Course Requirements & Grading**

- **Group assignment I** (groups of 4,5 students) – due September 8 – *17.5% of final grade*
- **Group assignment II** (groups of 4,5 students) – due September 29 – *17.5% of final grade*
    - For group assignments, all group members MUST work on all questions. In your submissions, each group member must put his/her initials next to every question that he/she was involved in. For every question that a group member was not involved in (i.e., his/her initials were missing), the assignment grade will be penalized by 5 points. False reporting of group members' contributions will result in 25 penalty points on the overall grade for that assignment for all members.
        - The TA may randomly call on individual group members to explain any question in the assignment. All group members must be prepared to discuss and justify their group's answers.
- **Quizzes** on Canvas (Solo) – *15% of final grade*
    - You should submit your own work without receiving any help from others. If the instructor realizes that a student received help from another person, the grade for that quiz will be replaced by 0.
- **Final**: Solo, home-assignment – due October 9 – *50% of final grade*
    - Each student must submit their individual work without receiving help from any other person. If the instructor realizes that a student has received help from another student, both the helper and the helpee will receive F on their overall grade. The exam will become available to students on Canvas on October 6th (at 11am) and will be due on October 9th (at 11pm).

- Final grades will be submitted to Registrar by mid-December. Between mid-October and early November, the TA and I may randomly ask students to verbally explain their final exam responses. Failure to adequately explain a response will result in a deduction of up to half the overall points on the final exam.

The target assignment for letter grades will be as follows:

| | |
|---|---|
| **A** | 90 and above; |
| **B** | 80 and above, not 90; |
| **C** | 70 and above, not 80; |
| **D** | 60 and above, not 70; |
| **F** | Below 60 points. |

Raw scores of the class will be analyzed to determine if an adjustment is necessary based on historic trends in this course. To protect the honest majority, a grade of "F" will be assigned in the course for any cheating on any exam, big or small, and the student will be referred to the Dean of Student Affairs for disciplinary action.

Late submissions are **not** accepted for any of the assignments or quizzes.

**Attendance Policy**

While students are encouraged to attend every class, there is no enforcement mechanism in MGT 6500 to ensure that they do so. If for any reason you do not attend a class, I strongly recommend that you watch the pre-recorded videos on Canvas to catch up on the content that was taught in a particular class (this is to ensure that you stay on track and don't fall behind). Note that the classes are not going to be recorded.

Important notes about attendance:

- It is extremely disruptive to the class when someone arrives late. Showing up late shows disrespect toward your fellow students. So, please be considerate! Please attend your own section and **come to class on-time**. Plan ahead for the traffic and always assume the worst!
- Using mobile phone in the classroom is strictly prohibited.
- Laptop/Tablet use is only allowed for taking notes, following slides, and doing analytical analysis on Radiant. Any other laptop/tablet usage is disrespectful to the class and other students who are focusing on the course material and is therefore prohibited.
- This is a large class. In order to help me (and your fellow students) learn your name I ask that you **display a name card at every class meeting**, showing your name in large, clearly legible letters.

**Office hours**: Office hours will be held online via Zoom. The times for the office hours are listed on the first page of the syllabus. If you are interested to meet me during the office hours, you should sign up for it using the following link: https://tinyurl.com/y538rjoq. Each student can

choose a 15-minute time slot if he/she needs to meet me. You then need to use the following Zoom link to meet me during the office hour during the time that you have signed up for (https://gatech.zoom.us/j/97752297210?pwd=th6f4Y0OD3eRFvwW6Z0iLJWHx3Z8Cn.1). If the office hours do not work for you or that you need more than 15 minutes or that you want to meet me in-person, please email me and we will find an appropriate solution.

**MGT 6500: Examination Coverage, Policies and Procedures**

*Policies and Procedures*

In your answers, be concise and precise. Include only those arguments that are **relevant** for answering the exam questions.

Students who are unable to submit their assignments/exams on a timely basis due to serious illness or injury, death or illness in the family, jury duty, military obligation, obligation to attend an Institute-sponsored event (such as stated in a GTAA travel letter) or a religious holiday must contact the instructor before the deadline, or as soon as reasonably possible, to make alternate arrangements. Students seeking postponement must provide evidence of the underlying reason at the time they submit their examination answers.

Examination scores will be made available to students. Students wishing to review their individual examination performance must schedule an appointment with the instructor.

All re-grade requests must be made in writing within one week of the day the exams are returned. In case, clearly state why a question should be re-graded. If you submit a question to be re-graded, your entire exam will be re-graded.

**Georgia Institute of Technology Honor Code**

All students are to uphold the Honor Code at all times. Any act of academic dishonesty (e.g., plagiarism) hurts the entire Georgia Tech community. The Honor Code aims to prevent any student from gaining unfair advantage over other students through academic misconduct. The Academic Honor Code is explained in detail at https://policylibrary.gatech.edu/student-affairs/academic-honor-code or the GIT General Catalogue.

**Tentative Course Schedule**

The following schedule provides the order in which we will cover various topics and the book chapters in which the topics can be found. The schedule I provide is only tentative. I will refer to "Business Analytics: Data Analysis & Decision Making" book as **BA**.

**Module 1: Aug 19 [1a] and Aug 21 [1b]**

Topics: Introduction + Descriptive Statistics (Mean, Median, Mode) + Variability (Range, IQR, Std Deviation) + Relationship Between Variables + Using Radiant to: Explore Data, Visualize Data, Create Pivot Tables, Apply Data Filtering and Transformation

*Resources:* BA: Ch. 2 and Ch. 3 | videos (Lecture 1a and 1b on Canvas)
*Quiz*: Quiz 1 available from 08/21 to 08/27.

**Module 2: Aug 26 [2a] and Aug 28 [2b]**

Topics: Probability (Definitions, Addition Rule, Dependence, Conditional Probability) + Random Variables (Definition, Mean, Standard Deviation) + Probability Distribution + Density Function + Normal Distribution (Standardization, Normal Table) + Binomial Distribution

*Resources:* BA: Ch. 4 and Ch. 5 | videos (Lecture 2a and 2b on Canvas)
*Quiz*: Quiz 2 available from 08/28 to 09/03.

**Module 3: Sep 2 [3a] and Sep 4 [3b]**

Topics: Sampling Methodologies + Sampling Errors + Sampling Distribution of Point Estimates + Central Limit Theorem + Confidence Interval for Proportions + Confidence Interval for Means + Confidence Interval for Difference in Proportions + Confidence Interval for Difference in Means

*Resources:* BA: Ch. 7 and Ch. 8 | videos (Lecture 3a and 3b on Canvas)
*Quiz*: Quiz 3 available from 09/04 to 09/10.

**Module 4: Sep 9 [4a] and Sep 11 [4b]**

Topics: Hypothesis Testing (Introduction and Motivation, Significance Level, Type I and Type II Errors, Types of Tests) + Hypothesis Testing for Means (The Critical Value Approach, The p-Value Approach) + Hypothesis Testing for Proportions (The Critical Value Approach, The p-Value Approach) + Hypothesis Testing for Difference in Proportions or Means

*Resources:* BA: Ch. 9 | videos (Lecture 4a and 4b on Canvas)
*Quiz*: Quiz 4 available from 09/11 to 09/17.

**Module 5: Sep 16 [5a] and Sep 18 [5b]**

Topics: Regression Analysis (Introduction/Motivation, Theory, Terminology) + Simple and Multiple Regression Analyses + Interpretation of Slope and Intercept + Prediction + Model Fit + Variable Transformation + Standardization + Multicollinearity + Dummy Variables

*Resources:* BA: Ch. 10 | videos (Lecture 5a and 5b on Canvas)
*Quiz*: Quiz 5 available from 09/18 to 09/24.

**Week 6: Sep 23 [6a] and Sep 30 [6b]**

Topics: Inference + Significance of Regression Coefficients + Challenges for Regression Analysis (Outliers, Multicollinearity, Omitted Variable Bias, Dependent Observations, Non-normality of Dependent Variable) + Prediction (Two Manual Approaches, Stepwise Regression) + Validation of Fit

*Resources:* BA: Ch. 10, 11 | videos (Lecture 6a and 6b on Canvas)
*Quiz*: Quiz 6 available from 09/30 to 10/05.

- *Sep 25 is NBMBAA* (https://nbmbaaconference.org/).

**Week 7: Oct 2 [7a]**

Topics: Interaction Analysis (Sample Split and General Interaction Approach) + Quadratic Relationships + Log-Log Models + Concluding Remarks

*Resources:* BA: Ch. 10, Ch. 11 | videos (Lecture 7a on Canvas)