CP 6025: Advanced Planning Methods

Course Instructor: Dr. Paige Clayton
Graduate TA: Gabriel Appiah
Course Schedule: Lecture: Tuesday & Thursday, 8:00-9:15am @ Skiles 249
Lab: Friday, 12:30-3:15pm @ Arch. West 358
Final Exam: Monday, Dec. 13, 8:00-10:50am @ Skiles 249

Course Learning Objectives:
Planning is an applied social science discipline. As such, statistics form the core of planning methods. This course will enable students to understand fundamental statistics principles and become conversant in common statistical methods used in planning. Though we will at times reference statistical theory, our focus is the application of statistical methods that are instrumental to answering important planning questions.

Upon completion of this course, students will be able to:
- Understand data and their characteristics to determine appropriate statistical analysis techniques
- Learn the correct parameters for describing different types of data
- Apply the R statistical package for basic data analysis
- Test hypotheses about relationships among variables
- Build statistical models for understanding relationships among variables
- Evaluate statistical models to determine their robustness
- Use Tableau for interactive visualizations

Course Structure:
This course is structured as a series of lectures and labs. Lab time will be devoted to implementing material covered in lectures in the R statistical package (with RStudio). Labs are considered required, unless otherwise noted. Missing labs and/or lectures will affect your performance on assignments and exams.

Prerequisites:
Basic knowledge of intermediate algebra and mathematics is required. Students should also be familiar with microcomputer-based applications for PC or Mac, especially Excel or other spreadsheet programs. Prior knowledge of R is not required but is advantageous.

If you have not had any math in some time or you anticipate this course being a challenge for you, I recommend you read chapters 1-5 of Sydsæter & Hammond Essential Mathematics for Economic Analysis (4th ed.) the first week of class. This book is easy to find online and any edition will work. Try the practice questions and check your answers in the back of the book.

Course Materials and Required Texts:
We will use two texts carefully chosen based on endorsements by other students at your level.
   - This text has been used in this class for a decade now.
Most course materials other than MBB and S will be available on CANVAS. All data sets for labs and assignments, presentations and notes, other helpful information will be posted on Canvas. The threaded discussions in Canvas will allow students to pose questions that the instructor, GTA, or other students can answer. Be prepared to use this function extensively. This will also reduce the overhead of asking questions that others might have already posted and were answered.

Additional Materials and Texts:
Basic statistics have not changed much in many decades; so, a large volume of information is available online and in numerous texts. There is also a large volume of information online regarding use of R/RStudio. Other texts that may be helpful:

Course Evaluation:
Final course grades will be based on satisfactory completion of assignments and exams as well as class participation. Students are expected to participate in all lectures, attend all assigned labs, participate in canvas discussions, and complete all online assignments and exams.

**Assignments (25%)**: There are six assignments scheduled to be due every one to two weeks. Your lowest graded assignment will be dropped. Working through the exercises is an important part of mastering the techniques learned in class and serves as a review for the exam. Students should not work together on assignments. Late submissions will be graded down by 5% of the total score of that assignment for each day of delay.

**Group Assignment (25%)**: During the second half of the semester, you will work in assigned groups on a statistics project with four deliverables.
1) Cleaned dataset and data dictionary (5%).
2) Background, model building, and regression analysis (10%).
3) Data visualization in Tableau (5%).
4) Presentation (5%).

**Midterm Exam (20%)**: The midterm is comprehensive and will be held during lab time. Please arrive early so that you have a full 75 minutes to complete the exam.

**Final Exam (20%)**: The final exam will be written as a 1.5-hour exam that you will have 3 hours to complete.

**Class Participation (10%)**: Students are expected to participate in all lectures and labs at the specified class time. Participation necessitates attendance. Constructive and positive contributions to class will earn a higher participation score. Using Canvas discussions constructively and positively may boost participation grades on the margin. Finally, peer assessments of your contribution to the group project will factor into your participation grade.
Ethics and in-class conduct
All homework assignments should be attempted individually. Any code, models, texts, images, or deliverables that are not your original work should be clearly cited. All class participants should exercise utmost care in their use of others’ ideas and ensure such ideas are duly acknowledged. Plagiarism is a serious offense at this Institute and if I detect any instance of plagiarism the perpetrator will be reported and given failing grades in the class. Please make sure that you are familiar with the Student Conduct Code (http://policylibrary.gatech.edu/student-life/student-conduct) as well as section XVI on “Cheating and Plagiarism” in your CRP Student Manual. If in doubt, check with the GTA or instructor.

Diversity Statement
Georgia Tech values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, please notify the instructor as soon as possible.

Access and Accommodations
Your experience in this class is important to me. If you have already established accommodations with the Offices of Disability Services, please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course. If you have not yet established services through Disability Services, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to: mental health, attention-related, learning, vision, hearing, physical or health impacts), please contact the Office of Disability Services at 404.894.2563, dsinfo@gatech.edu, or disabilityservices.gatech.edu.

Cellphones & Internet surfing
This class has a zero-tolerance policy for cell phones, Internet surfing, and checking email during lectures and labs. Cellphones should be out of sight and silenced.

Additional notes on general good practice
It is the student's responsibility to keep current with the course material to review lectures, labs, assignments, etc. Please check Canvas for the class regularly as the site will be updated frequently.
- You can install software programs on your computer including R and RStudio. This may allow you to work independently at your chosen location. You will be able to download the software during Lab 1.
- Please get a USB thumb-drive or an external hard-drive to back up your work after each class. Due to performance and consistency issues, using the college network drive (M:/) is NOT recommended during in-class/on-campus lab exercise or homework activity. You will be asked to use a local hard drive (C:/) on a local machine only for all lab exercises/homework. Students may copy all lab works to their personal network drive after class.
- When you submit your homework, please follow naming convention like this: 'lastname_hw#.zip’

COVID & Class
- I will be wearing a mask in class following local guidelines and encourage you to wear a mask as well.
- If you would like to meet in person for office hours in my office, I encourage you to wear a mask. Otherwise we should meet virtually.
See this website for information on Georgia Tech’s response to COVID-19 and how “Jackets Protect Jackets”: http://health.gatech.edu/coronavirus/jackets-protect-jackets

**Student hours and communicating with the instructor and GTA:**

Questions about class materials, assignments, and exercises that are relevant to all students should be posted on Canvas threads. Other questions related to individual issues should be emailed directly to the GTA or the instructor. Please label your emails regarding this class with ‘[CP6025-F21]’. Email addresses are below:

- Dr. Clayton: Paigeclayton@gatech.edu
  - Dr. Clayton's student hours: Wed. @ 3:00-4:30pm or by appointment. Use Calendly to schedule a time slot: https://calendly.com/paigeclayton/office-hours

- Gabriel Appiah: gabriel.k.appiah@gatech.edu
  - Gabriel’s student hours: Mon. 9-10am or by appointment (virtual link: https://bluejeans.com/4877423907/)