

# ISYE 8813 – Mathematics of Operations Research, Fall 2020

**Instructor:** Prof. Rachel Cummings

**Schedule Class Times:** Tuesday and Thursday, 9:30-10:45am

**Location:** Lectures will be virtual, in-person location TBD

**First Lecture:** August 18, 9:30-10:45AM, BlueJeans: <https://bluejeans.com/829292819/4703>

**Office Hours:** Virtual, by appointment

**Email:** rachelc@gatech.edu

**TA:** TBD

**TA Office Hours:** TBD

**Format:** This course will be in the Hybrid Touchpoints format. Lectures will be pre-recorded and posted online to be watched asynchronously. Scheduled lecture times will be used for virtual problem-solving sessions and Q&A for the online pre-recorded lectures. Periodically throughout the semester, scheduled lecture times will be used for in-person problem-solving sessions. The frequency will be at most once every two weeks, and may occur less frequently as the COVID-19 status on campus evolves. Attendance in these in-person sessions is encouraged but not required. If it becomes unsafe to continue in-person sessions, this course may move fully remote at some point in the semester. There will be a survey the first week of classes to determine the learning needs of all students: workload, time zone, being quarantined, and other situations that impact their learning. Adjustments may be made to the syllabus based on the findings of this survey.

## **Mandatory Face Coverings:**

Effective July 15, 2020, University System of Georgia (USG) institutions will require all faculty and students to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. Face coverings that cover nose and mouth are required to be worn during all in-person components of the course. Face covering use will be in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Refusal to comply with the requirement may result in discipline through the applicable conduct code for faculty, staff or students. Reasonable accommodations may also be made for those who are unable to wear a face covering for documented health reasons. For more information about face masks and coverings, review the guidelines from Human Resources.

## **Description:**

This course is intended for first-year Ph.D. students in ISyE (although others are welcome), and will serve as a preparatory course for the core courses in the Ph.D. program. One of the main goals in this course is to develop mathematical maturity and to learn writing mathematical proofs. The course will cover a sampling of topics including:

- Introduction to Real Analysis
- Basic Probability
- Basic Linear Algebra

**Reference Books:**

There is no prescribed textbook for this course because different books will be used for different topics. The following references will be useful:

1. Walter Rudin, *Principles of Mathematical Analysis*
2. Sheldon Ross, *Introduction to Probability Models*
3. Gilbert Strang, *Linear Algebra and Its Applications*

**Canvas/Piazza:**

This course will be hosted on the Canvas. Homework assignments and solutions, and other announcements will be posted on Canvas. There is a Piazza for this course, which can be accessed through Canvas. Piazza is the best place to post any questions on the content or homeworks, so that other students or TA or the instructors can answer. Moreover, other students with similar questions will benefit from the discussion. You are strongly encouraged to take part in the discussions on Piazza.

**Contacting the instructor:**

If you have general question about the content, homeworks or logistics of the course, you are encouraged to post it on Piazza. This will likely get a faster response than email, since other students can respond to the post as well. Feel free to also respond to the questions from your friends on Piazza. If you want to contact the instructors for any other reason, email is the best way. Please direct any questions about homework grading to the TA (aside from regrade requests, detailed below).

**Grading and Format:**

The main graded components of the course are as follows:

- Homework – 75%
- Midterm exam – 10%
- Final exam – 15%

**Homework:**

Homework will be assigned every 1-2 weeks, and will be due electronically via Gradescope by 11:59pm on the due date indicated on each homework, which will typically be Thursdays. Details of the electronic submission will be posted on the course Piazza page and on the assignment itself. No late assignments will be accepted. There may be a homework due on the last day of classes. It is against the code of conduct to copy the solutions from any source, but you are encouraged to use academic references such as textbooks or research papers as needed. You may discuss homework problems and learn from your classmates, but each person must write up their own solutions independently. You must also mention the names of persons with whom you discussed, and any references used on each assignment. Assignments will be graded by the TA. On most assignments, selected problems will be graded.

**Exams:**

Exams will be conducted virtually. Details of the exams will be announced later, and will depend on the virtual test-taking software available.

Missing an exam will be accommodated only in case of Institute approved absences with a letter from the Dean of Students. Alternative arrangements must be made prior to the exam. No makeup exams will be given, but the percentage of the other exams will be adjusted.

**Participation:** All students are expected to: (1) watch the pre-recorded lectures, (2) complete all homework assignments on time, and (3) complete the midterm and final exams at their scheduled times. All of these mandatory participation activities will be done remotely. Students are also encouraged but not required to attend virtual Q&A during the scheduled lecture time and in-person problem-solving sessions.

**Regrading:**

Regrade requests will be accepted via email to the instructor and the TA within 5 days of the graded assignment/exam being returned. Requests must include (1) a PDF of the original submission and (2) a LaTeX-produced PDF detailing which problems were graded incorrectly and an argument that the submitted solution is indeed correct. Regrades may only be requested if it is believed that a correct answer was marked as incorrect, not because insufficient partial credit was given to an incorrect or partially correct solution. If you request a regrade, you accept that the entire assignment/exam will be regraded, not just the problem(s) believed to be graded incorrectly.

**Academic Integrity:**

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. You are expected to adhere to Georgia Tech's Academic Honor Code, found online here: <http://osi.gatech.edu/content/honor-code>

**Office of Disability Services:**

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (<http://disabilityservices.gatech.edu/>) at (404)894-2563 as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.