ISyE 6320/ HS 6400 Syllabus

Public Impact Applications of Operations Research and Management Science / Health Systems Practice, 3.000 Credits

Spring 2027

Tuesday, Thursday from 2:00 PM - 3:15 PM @ George Tower 1002

Instructor Information

Instructor	Email	Office Hours
Jovan Julien (li~they)	jovan.julien@gatech.edu	By appointment

General Information

Description

This course focuses on the health and public applications of Operations Research/Management Science (OR/MS). In particular, we will focus on OR/MS applications in health and humanitarian systems.

Students participating in the course will complete a group project (some of these are with a partner organization) and will also read and discuss papers or case studies on relevant course topics. Each project has two major goals: a) develop tools or recommendations that are useful in practice, and b) get a paper (draft) ready for publication in a high-quality journal. A tentative listing of reading materials can be found on the course page.

Pre- &/or Co-Requisites

There are no formal pre-requisites or co-requisites for this course. However, students are expected to have some prior exposure or expertise to the methods of operations research, including optimization, statistics, simulation, and computer programming. The course is intended for graduate students interested in a direct experience of healthcare research or performing health analytics in industry.

Course Goals and Learning Outcomes

This course is designed to provide an overview on the health and public applications of OR/MS.

Course topics include the following:

- Mathematical modeling of infectious and non-infectious diseases and evaluation of intervention strategies
- Improving supply chain and other operational efficiencies and effectiveness in governmental and non-governmental organizations

Course Requirements & Grading

Graded Component	Weight (%)
Presentation (Proposal)	5%
Project scope / description	5%
Presentation (Midterm)	10%
Mid-semester progress report	10%
Presentation (Final)	15%
Class Participation	15%
Project (individual contribution and final report)	40%

Description of Graded Components

Students are responsible for all announcements made in class and for all changes in the schedule that are posted on the class website.

Projects: Students will be assigned groups and work on a real-world project. Each student is expected to keep a personal log of their activities and time spent for the project. The groups will submit short summaries (not to exceed one page) of their weekly progress to the instructor as well as their plans for the following week, clearly specifying the accomplishments of each team member in the previous week and the task assignment for the following week.

Presentations: Students will make group presentations about the progress of their projects, following the same content and timeline as the reports (presentations will be due earlier than the reports). The presentations will be an excellent opportunity for everyone to learn about new topics and give feedback to each other. Presentation (tentative) dates are as follows:

- Proposal presentation: February 11, 2027
- Midterm presentation: March 11, 2027
- Final presentation: April 15, 2027

Reports: Each group will submit a project scope/description (by February 18, 2027), a mid-semester progress report (by March 18, 2027) and a final report (by April 22, 2027). Note that some of the due dates may coincide with reading periods, because this class does not have a final exam. The final report may need to be updated/revised within a week of submission, based on the instructor's feedback.

Class participation: Students are expected to attend all meetings with the instructor and teammates, unless they have a legitimate excuse, in which case they need to inform the instructor and teammates in advance. During weekly team meetings (some of these might be conducted via Zoom, and/or include collaborators), we will discuss accomplishments for the past week, goals for the next week, and other issues relevant to the project.

We may also have presentations given by other ISYE faculty and Ph.D. students or outside guests on health and public applications of OR/MS (the exact dates, times, and locations of these presentations will be announced with at least two weeks notice).

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

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

According to policy, grades at Georgia Tech are interpreted as follows:

A	Excellent (4 quality points per credit hour)
B	Good (3 quality points per credit hour)
C	Satisfactory (2 quality points per credit hour)
D	Passing (1 quality point per credit hour)
F	Failure (0 quality points per credit hour)

See http://registrar.gatech.edu/info/grading-system for more information about the grading system at Georgia Tech.

Course Materials

Course Text

This course will only use texts that are freely available to students.

Additional Materials/Resources

All other course reading materials will be provided on the course webpage. Project-specific materials (e.g., data, research papers) may be provided by the instructors or project sponsors.

Course Website and Other Classroom Management Tools

All course materials will be posted on Canvas.

Course Expectations & Guidelines

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, 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.

Attendance and/or Participation

Students are graded on attendance or participation. Poor participation in the course may harm your understanding of the course material and therefore, your performance in course assignments. Students are expected to come to class prepared to answer questions based on assigned readings, course materials, and their meetings with the instructor(s) and project clients. They are also expected to ask questions for concepts that are challenging or require clarification.

Collaboration & Group Work

Most assignments in this class require group submissions. However, individual students are expected to contribute their fair share of effort towards their project.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

All students are expected to submit all assignments on time. All late submissions are subject to a late submission penalty. Late submissions will generally be penalized heavily (up to the assignment's full point value) except in outstanding circumstances. If you suspect that you will not be able submit an assignment on time, please contact the instructor.

Generative AI Tools

This course is about growing in your ability to write, communicate, and think critically. Generative AI agents such as ChatGPT, DALL-E 2, and others present great opportunities for learning and for communicating. However, AI cannot learn or communicate for you, and so cannot meet the course requirements for you.

In this course, using generative AI tools in the work of the course (including assignments, discussions, ungraded work, etc.) is allowed after consultation with the instructors.

As with any technology, generative AI tools need to be used critically and according to academic and professional expectations. Thus, when using generative AI tools in the work of this course, you are expected to adhere to these principles:

- **Responsibility**: You are responsible for the work you submit. In instances in which your instructor allows generative AI tool use, this means that any work you submit should be your own, with any AI assistance appropriately disclosed (see "Transparency" below) and any AI-generated content appropriately cited (see "Documentation" below). This also means you must ensure that any factual statements produced by a generative AI tool are true and that any references or citations produced by the AI tool are correct.
- **Transparency**: Any generative AI tools you use in the work of the course should be clearly acknowledged as indicated by the instructor. This work includes not only when you use content directly produced by a generative AI tool but also when you use a generative AI tool in the process of composition (for example, for brainstorming, outlining, or translation purposes).
- **Documentation**: You should cite any content generated by an AI tool as you would when quoting, paraphrasing, or summarizing ideas, text, images, or other content made by other people.

Using generative AI tools in the course without adhering to these principles may be considered an infraction of the Georgia Tech Honor Code subject to investigation by the Office of Student Integrity.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Student Use of Mobile Devices in the Classroom

Research on learning shows that unexpected noises and movement automatically divert and capture people's attention, which means that one student's use of a mobile devices (laptops, cell phones, tablets, etc.) can distract another student and disrupt their ability to learn. In addition, students using mobile devices often become engaged in matters that are not related to the class they are attending. Further, research indicates that students taking notes on laptops tend to process less as they take notes, and the depth of their learning suffers.

For these reasons, use of mobile phones in the classroom should be minimized. Students are expected to keep their mobile phones on silent and stored out of sight. Laptops and tablets may be used during class but should be restricted to course-relevant activities. If a student's mobile device usage becomes distracting, they will be asked to leave or put away the device for the remainder of the class period.

Campus Resources for Students

These are resources on campus that are available to students:

- **The Counseling Center:** https://counseling.gatech.edu/ The Counseling Center educates students for life by providing a variety of services and programs that are consistent and consonant with the strategic plan goals of the Institution and the Division of Student Life. Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, crisis intervention, referral services, as well as outreach programming, and consultation for faculty and staff, family and friends of Georgia Tech students. All counseling services are confidential and free of charge for eligible students. The Counseling Center provides brief or short-term therapy for a variety of presenting issues.
- **The Center for Assessment, Referral, and Education (CARE):** https://care.gatech.edu/ CARE is the primary resource for mental health support at Georgia Tech.
- **The Division of Student Life:** https://studentlife.gatech.edu/content/get-help-now The Office of the Vice President for Student Life and Dean of Students provides a number of services to assist students with medical and personal emergencies.

Optional Reading

OPTIONAL READING: Students are encouraged to read the following case studies and discuss them with their teammates.

- An Introduction to Community Health
- SLS Case Study: The Flint Water Crisis
- ReGenesis Case Study: Creating a Sustainable Community through Collaborative Problem-Solving
- Thinking More About Food, Climate Change, and Sustainability