

MATH 8100 Mathematical Programming

Fall 2020

Instructor: Dr. Yuyuan Ouyang (yuyuano@clemsun.edu)

Class Times: MWF 12:20pm–1:10pm

Class modality: Fully online, synchronous

Classroom: Online

Zoom class meeting link: <https://clemsun.zoom.us/j/94022253851>

Tentative Office Hours (through Zoom): MW 10:00am–11:00am or by appointment (Zoom link is different from the class meeting <https://clemsun.zoom.us/j/4653016208>)

Textbooks:

- [BT] D. Bertsimas and J. Tsitsiklis, *Introduction to Linear Optimization*, Athena Scientific, 1997.
- [BV] S. Boyd and L. Vandenberghe, *Convex Optimization*, Cambridge University Press, 2004 (available online at <http://stanford.edu/~boyd/cvxbook/>).

Objectives: The course covers the fundamentals of mathematical programming, including problem modeling, theoretical analysis, and algorithm design of linear and nonlinear optimization.

Materials covered: The core materials of the course are chapters 1-5 of [BT] and chapters 2, 3, and 5 of [BV]. The tentative schedule of topics is

- Review of prerequisite mathematical concepts
- Optimization models and introduction to optimization problem solving
- Theory behind linear and nonlinear optimization
- Algorithm design and analysis of linear optimization
- Network flow problems (if time permits)

It should be noted that the above schedule does not necessarily follow the chapter sequences of the textbooks. Extra materials out of the textbooks may be covered during the course.

Course evaluation: Homeworks and mid-term exams will be given throughout the semester. A comprehensive project, in which students need to perform necessary theoretical analysis and algorithm implementation, and write a formal technical report, will be due at the end of the semester. Late homework and project submissions will not be accepted.

	Homeworks	Midterm exams	Projects	Final exam
Points	25	25	25	25

Class cancellation: The class will be dismissed in the case when the instructor or the invited lecturer is not present within 15 minutes of the scheduled start time.

Final grade:

Score	Over 85	70–84	60–69	Below 60
Grade	A	B	C	F

Attendance expectations: Class attendance is strongly recommended. Attending classes, reviewing the recorded class videos, working on the assignments on time, and attending office hours for class questions are all important for the success in the course. Exams and assignments delayed due to inclement weather, power outages, etc. will be rescheduled per the announcement of the instructor. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas.

Specific COVID-19 related information: For any student who reports testing positive or is being asked to quarantine/isolate because of exposure to the virus, please inform the instructor for accommodations. Additional communication via email is encouraged; students should follow up with their instructor to develop a continued plan of study for the course.

Accessibility: Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to a class should let the instructor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848 or by emailing studentaccess@lists.clemson.edu. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their instructors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>.

Clemson University Title IX (Sexual Harassment) statement: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at

<http://www.clemson.edu/campus-life/campus-services/access/title-ix/>.

If you believe you or someone else that is part of the Clemson University community has been discriminated against based on sex, or if you have questions about Title IX, please contact the Title IX Coordinator Alesia Smith who is also the Executive Director of Equity Compliance, at 110 Holtzendorff Hall, 864-656-3181 (voice) or 864-656-0899 (TDD). The Title IX Coordinator is the person(s) designated by Clemson University to oversee its Title IX compliance efforts.

Academic Continuity Plan: Clemson has developed an Academic Continuity Plan for academic operations. Should university administration officially determine that the physical classroom facility is not available to conduct classes in, class will be conducted in a virtual (online) format. The University issues official disruption notifications through email and social media. When notified, use one of the following links to navigate to Clemson Canvas where you will find important information about how we will conduct class:

Primary access link: www.clemson.edu/canvas

Secondary access link, if needed: <https://clemson.instructure.com/>

You can also use the Canvas Student App.

Campus safety and emergency: Clemson University is committed to providing a safe campus environment for students, faculty, staff, and visitors. As members of the community, we encourage you to take the following actions to be better prepared in case of an emergency:

- Ensure you are signed up for emergency alerts (<https://www.getrave.com/login/clemson>),
- Download the Rave Guardian app to your phone (<https://www.clemson.edu/cusafety/cupd/rave-guardian/>)
- Learn what you can do to prepare yourself in the event of an active threat (<http://www.clemson.edu/cusafety/EmergencyManagement/>)

Academic integrity statement: As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating or stealing in any form.