ISyE 6669 - Spring 2027
Deterministic Optimization

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Prerequisites: good familiarity with Linear Algebra.

Course Outcomes: The goal of the course is to teach the students the formulation and algorithmic aspects underlying Linear Programming, Network Flows and Nonlinear Programming. Topics to be covered include: problem formulations, simplex method in tableau and revised form, duality theory, an introduction to the geometry of the simplex method, sensitivity analysis, the simplex method for network flow problems, integer programming formulations and algorithms, optimality conditions, and numerical methods for nonlinear programs.

Textbook: Wayne L. Winston and Munirpallam Venkataramanan, *Introduction to Mathematical Programming. Operations Research: Volume One*, Brooks/Cole, Cengage Learning, 2003, 4th edition.

Grading policy: There will be two midterm exams and the final exam. The exams will have the following weights on the final grade: midterm exams (50%) and final exam (35%). Homework will be assigned approximately every two weeks. They will be partially graded, and the weight of their average grade will be 15% of the total grade. *Your final average score, computed according to the above weights, will be curved only at the end of the course to determine your letter grade for the course. The time allocated by Georgia Tech to the final exam is approximately three hours, but my usual allocated time is about 120 minutes. The final exam will be designed so that the time allocated to it will be sufficient.*

Homework policy: Your hw solutions should be submitted online before the due date and time assigned to them on Canvas. After that, they will NOT be accepted. There will be NO EXCEPTION to this rule, unless you have an emergency that must be clearly explained.

Academic Honesty: Academic Honesty: It is expected that all students be aware of their responsibilities; this class will strictly adhere to the Georgia Tech Academic Honor Code (www.honor.gatech.edu).

Teaching mode: The teaching mode for the course is Residential, i.e., classes will be given in the classroom unless an emergency arises.

Re-grade: You can submit a written explanation by email to me for regrade after you check

against the solutions and within 1 week after the solutions are provided.

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 email me as soon as possible to set up a time to discuss your learning needs. For Covid19, individuals who fall into higher risk groups, as defined by the Georgia Department of Public Health and the Centers for Disease Control and Prevention, may request an accommodation. Students seeking an academic accommodation should start by contacting the Office of Disability Services.

Laptop, tablet and Cell phone use Cell phone, tablet and laptop can be used to follow the class, not to become a distraction. They can used for taking notes, refer to notes, taking a photo on the board, etc. Please do not distract the others.

Generative AI In general, use of Generative AI and of any previous semester course materials, such as homework, projects, and any other coursework, are prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with in accordance with the GT Academic Honor Code. When in doubt regarding what constitutes a violation, do not guess the answer and post on Piazza for clarifications.

Collaboration, Group Work, and Use of Generative AI You are allowed to work in groups on all homework and out-of-class assignments (and you may use my solutions), but any work you turn in must be written in your own hand. In-class tests and exams are to be your own work. All in-class tests and exams will be closed book and notes.

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. The Student-Faculty Expectations articulate some basic expectations 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.