ISyE 7661 Linear Inequalities – Fall 2026

Course Information

Instructor: Moïse Blanchard (mblanchard41@gatech.edu)
Course Prefix and Number: ISYE 7661
Term: Fall 2026

Course Description

This course studies the theoretical foundations of linear and integer programming with focus on algorithmic results. Topics covered will include algorithms for linear programming, Farkas lemma, duality, simplex method, polarity, lattices, basis reduction, algorithms for integer linear programming, total unimodularity, theory of cutting-planes.

Course Learning Outcomes

Upon successful completion of this course, students will develop a rigorous understanding of the theoretical foundations of linear and integer programming. They will be able to analyze and apply fundamental results such as duality theory, Farkas' lemma, and total unimodularity, and understand the structure of polyhedra and lattices. Students will gain familiarity with key algorithms, including the simplex method, basis reduction techniques, and cutting-plane methods, and will be able to assess their correctness and computational complexity.

Required Course Materials

The course material will be based on the following textbook:

Theory of Linear and Integer Programming, Alexander Schrijver, Wiley, 1998.

Grading Policy

Your course grade will be based upon my assessment of your understanding of the material covered throughout the semester. The weights used for grade assignment will be:

Homework:	30%
Midterm:	30%
Final:	40%

Thresholds for letter grade assignment are as follows.

A: 90% ≤ total grade ≤ 100%
B: 80%≤ total grade <90%
C: 70%≤ total grade <80%
D: 60%≤ total grade <70%
F: 0%≤ total grade <60%

Homework

There will be 4-5 problem sets. You may discuss homework/assignments problems with your fellow students. But your final answers should be based on your own understanding.

Exams

There will be one midterm and one final exam.

Attendance Policy

Attendance is highly recommended but will not be formally checked.

Academic and Research Honesty/Integrity Statement

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. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research for this thesis course.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State

University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services 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.

Expectations of Advisors and Advisees

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 Expectations of Advisors and Advisees articulates 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.