CSCI 355 Spring 2026 Syllabus

Ben Rosenberg

2025-12-26

Course information

- Course name: **CSCI 355: Intro to Linear Programming**
- Course mode of instruction: **In person**
- Class days and times: **Mon/Wed 7:00-8:15 PM**
- Class location: **TBD**
- Prerequisites:
  - CSCI 127 - Introduction to computer science (Python)
  - CSCI 150 - Discrete structures
  - MATH 160 - Matrix algebra

Instructor contact information

- Instructor name: Ben Rosenberg
- Instructor email address: benjamin.rosenberg24@myhunter.cuny.edu
- Office hours: TBD
- Department contact information: Please see https://hunter.cuny.edu/artsci/computer-science/contact/

If you need to contact me, please reach out via email. Please put "CSCI 355" in the subject to make it easier to find your emails.

Course materials

Course website: https://benrosenberg.info/teaching/sp26/csci35500.html

- Lecture notes/slides (if applicable) will be posted on the course website.
- Assignment materials will be posted on the course website.
- Assignments will be submitted via Brightspace. You are expected to be able to access Brightspace, so that you can complete assignments.
- Additional materials may be provided ad-hoc on the course website.

Course description

- **Course Description**: This course provides an introduction to linear, integer linear, and quadratic programming, focusing on optimization techniques and their applications. Students will learn to formulate, analyze, and solve optimization problems using both theoretical and computational approaches.
- **Learning Goals**: By the end of the course, students will:
  - Develop the ability to formulate linear, integer linear, and quadratic programming models for optimization problems.
  - Gain a solid understanding of the theoretical foundations, including:
    * Algorithms for solving linear, integer linear, and quadratic programs.

* Matrix and vector representations of linear, integer linear, and quadratic programs.
  * The importance of convexity in optimization and the expressive power of linear, integer linear, and quadratic programming.
  – Implement and solve linear, integer linear, and quadratic programming models using the OR-Tools Python library.

Course calendar

For course meeting time and location, see the "Course information" section above.

For up-to-date information on academic dates see the Hunter website:

> https://hunter.cuny.edu/students/registration/academic-calendar/

Course structure

Expected lecture topics (mostly in order):

- Linear algebra review
- Linear programming, modeling problems as LPs
- Using the OR-Tools Python module to solve optimization problems
- LP solving methods and their differences
- Integer programming, solving integer programs with branch and bound
- SAT reduction to ILP, demonstration of NP-completeness
- Modeling general discrete problems as ILPs
- Common ILP models, including the Traveling Salesman Problem
- Quadratic programming, QP modeling requirements
- QP solving methods and tools
- Convex programming hierarchy

Lecture material is subject to change. Lectures may not align with classes.

There will probably be around 3 or 4 homework assignments, and 2 or 3 projects.

Grading

- Homework: 15%
- Projects: 15%
- Midterm exam: 30%
- Final exam: 40%

Grade mapping

Per CUNY guidelines, this course uses the grading structure given here to map numerical course grades to letter grades: https://hunter.cuny.edu/students/registration/records-and-transcripts/grading-structure/

Academic integrity policy

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

Course-specific academic integrity addendum

This course permits the use of AI tools and other online resources on homeworks and projects.

The exams, however, are closed-book and in-person. These comprise 70% of the course grade.

Hunter ADA Policy

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772-4857 or (212) 650-3230.

Hunter College Policy on Sexual Misconduct

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123. CUNY Policy on Sexual Misconduct Link: https://www.cuny.edu/wp-content/uploads/sites/4/pageassets/about/administration/offices/ovsa/policies/Sexual-misconduct-8.30.18-PSM-2018-005.pdf

Syllabus change policy

This contents of this syllabus may be changed over time. Changes will be announced in lecture as necessary. For the most recent version of the syllabus, check the course website.