Instructor: Karthik Chandrasekaran

Contact: karthe@illinois.edu

Lecture Timings and Location: Tue & Thu, 9:30–10:50am
Zoom link: https://illinois.zoom.us/j/89871143279?pwd=VEZVTWZwMWZGbmQwMXlKQxIvdnA1UT09

- All timings for the course (lectures, office hour, homework/exam deadlines) are Urbana local time, i.e., Central Time.
- We will have synchronous lectures via Zoom. Links to recorded lectures will be posted in Compass2g.
- I encourage you to type questions and answer each other’s questions in the Zoom chat window during the live lecture. Do not hesitate to ask questions. Remember that this area is new for all students, so if something is unclear to you during the lecture, then it is likely to be unclear to most of your classmates as well. So, your questions will help yourself as well as all students.
- Lecture notes will be posted in the course website after the lecture.

Instructor Office Hours and Location: Wed, 5–6pm
Zoom link: See compass2g

Course Homepage: http://karthik.ise.illinois.edu/courses/ie511/ie511-sp-21.html

Textbooks that you may wish to consult:
- Nemhauser and Wolsey, Integer and Combinatorial Optimization
- Wolsey, Integer Programming
- Schrijver, Theory of Linear and Integer Programming

Course Description: The course will provide a comprehensive treatment of integer optimization including theory, algorithms and applications at the introductory graduate level. Some specific topics to be covered are: Modeling & Formulations, Polyhedral Theory, Complexity, Optimization & Separation, Relaxations, Dynamic Programming, Branch & Bound, Cutting Planes, and Lagrangian Duality.

Mathematical maturity at the level of a beginning graduate student will be assumed. Familiarity with reading and writing mathematical proofs and basic knowledge in Linear Algebra are required. Prior coursework in Linear Programming, Linear Algebra and Graph Theory will be helpful.

Student Learning Objectives: Develop a thorough understanding of the theory and algorithms for Integer Programming. Practice and improve rigorous mathematical proof writing skills.

Grading:
- Homeworks 60%
- Exams 20% each
Homework and Exam policies:

- Homeworks will be posted in Compass2g. Strict due dates will be enforced.
- Typesetting homework solutions (in 11pt or larger font) is recommended. Figures and math formulae may be drawn by hand in black ink.
- We will use gradescope for grading homeworks: [https://www.gradescope.com/](https://www.gradescope.com/). Use the code given in compass2g to register for this course in gradescope.
- See these resources on how to submit via gradescope:
  - [https://www.gradescope.com/get_started#student-submission](https://www.gradescope.com/get_started#student-submission)
- While submitting the scan, ensure that you match the question number to the page in your submission.
- Ensure that you click the buttons to complete the submission and receive a confirmation email of submission via gradescope.
- Collaboration and other solution sources on problems assigned for homeworks, midterm or final are NOT permitted.
- Mathematical rigor, correctness, and clarity of exposition will be factors in grading. You are encouraged to proofread the solutions before submission.
- Grading clarifications (in homeworks and exams) should be resolved within a week from the date of return of the graded submissions. No clarifications will be entertained after a week.
- Exams will be in online format. You can take the exam any time in a pre-specified 24-hour window. After you start, you will be given a pre-specified duration to submit your answers.
- Ensure that you have good internet connection before you start the exam. Re-attempts/late submissions will not be possible.
- Plagiarism will be dealt with severely. No credit for the homework or the exam.
- You are welcome to discuss the course material with your colleagues.

Guidelines:

- Raise questions and clarify doubts during lectures. No question is s-t-o-o-p-i-d!
- Answer the questions raised during lectures. No answer is a-b-s-u-r-d!
- A few exercise problems will be assigned during the lectures. You do not have to submit solutions to these problems. Solving them will help you keep up with the course material.
- If you are starting to have difficulties in this course, it is imperative that you meet with me and talk to me before you are so far behind that it is impossible to catch up. I want you to succeed in this course and am here to help you do so.

Academic Integrity: Please review the University of Illinois, Urbana-Champaign’s academic integrity policy at [https://studentcode.illinois.edu/article1/part4/1-401/](https://studentcode.illinois.edu/article1/part4/1-401/)