

**Instructor:**

Karthik Chandrasekaran

**Contact:**

karthe@illinois.edu

**Lecture Timings and Location:**

Tue & Thu, 9:30–10:50am  
1111, Siebel Center

- Electronic gadgets (laptops, tablets and phones) are **NOT** permitted during lectures.
- Contact the instructor if you need special permission to use electronic gadgets.

**Office Hours and Location:**

Karthik: Mon, 5–6pm, 4222 Siebel Center

**Teaching Assistant:**

Setareh Taki (staki2@illinois.edu)  
Office hours: Thu 5-7pm, Location: 4 Transportation Building

**Course Homepage:**

<http://karthik.ise.illinois.edu/courses/ie511/ie511-sp-17.html>

**Texts 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 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%  
Midterm 20%  
Final 20%

### Homework and Exam policies:

- Midterm and Final will be in-class written exams.
- Homeworks will be assigned on Thursdays. Solutions will be due on the Thursday of the following week before the beginning of the lecture. Strict due dates will be enforced.
- Homework submission should have each problem starting in a fresh page with the problem number marked clearly in the margin. The submission should have your name and be stapled.
- Typesetting homework solutions (in 10pt or larger font) is recommended. Figures and math formulae may be drawn by hand in black ink.
- Electronic submission through email will be accepted provided it is in a single file pdf format. Electronic submissions should be through the Compass2g website. Email submissions will NOT be accepted.
- Collaboration and other solution sources on problems assigned for homeworks, midterm or final are **NOT** permitted.
- You are welcome to discuss the course material with your colleagues.
- Mathematical rigor, correctness, and clarity of exposition will be factors in grading.
- 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.
- Plagiarism will be dealt with severely. No credit for the homework, midterm or final.

### Guidelines:

- Raise questions and clarify doubts during lectures. No question is s-t-o-o-p-i-d!
- You are encouraged to answer the questions raised during the lectures. No answer is a-b-s-u-r-d!
- Take notes during the lectures.
- A few exercise problems will be assigned during the lectures. You do not have to submit solutions to these problems. These are model problems for homeworks and exams. Solving them will help you keep up with the course material.

### Academic Integrity:

Please review the University of Illinois, Urbana-Champaign's academic integrity policy at [http://studentcode.illinois.edu/article1\\_part4\\_1-401.html](http://studentcode.illinois.edu/article1_part4_1-401.html).