

Instructor: Karthik Chandrasekaran (karthe@illinois.edu)

Office Hour: TBD

301 Transportation Building

Lectures: Tue, Thu, 8–9:20am

Location: 112 Transportation Building

- I will post lecture slides in Canvas a day before the lecture. I encourage you to print and take notes.
- I will update lecture slides (with additional notes) after the lecture. I will post updated the updated lecture slides for the week's lecture by 6pm on Friday in Canvas.

Teaching Assistants:

Tharunkumar Amirthalingam (ta9@illinois.edu)

Office hour: TBD

Location: TBD

Xiaoqi Bi (xiaoqib2@illinois.edu)

Office hour: TBD

Location: TBD

Course Outline: <https://karthik.ise.illinois.edu/courses/or/ie310-fa-24.html>

Course Resources:

- All course resources will be available in Canvas: <https://canvas.illinois.edu>.
- For discussions, we will use **Piazza**. Piazza is highly catered to getting you help fast and efficiently from classmates, teaching assistants, and myself. Rather than emailing questions to me, I encourage you to post your questions on Piazza. Your questions will benefit everyone in the class. Find our class signup link at: <https://piazza.com/illinois/fall2024/ie310>
- For homework and exam submissions, we will use **Gradescope**: <https://www.gradescope.com>.

Textbook that you may refer (not required): Introduction to Operations Research, Hillier and Lieberman (10th edition)

Course Description: This is a required course in the undergraduate IE and SED program.

This course will introduce fundamental topics in optimization at the undergraduate level. Specific topics to be covered are: Mathematical Modeling, Linear Programming, Simplex Method, Duality, Sensitivity Analysis, Game Theory, Transportation and Assignment Problems, Network Optimization Problems, Integer Programming, and Nonlinear Optimization.

Pre-requisites: Mathematical maturity at the level of a junior undergraduate student will be assumed (e.g., thorough working knowledge of permutations, combinations, and binomials). Prior coursework in Linear Algebra and Calculus and familiarity with Matrices are required.

Student Learning Objectives:

Develop a working knowledge of mathematical modeling and solution techniques in optimization.

Grading:

Homeworks – 60%, Quizzes – 15%, Exam 1 – 12.5%, Exam 2 – 12.5%.

Homework, Quiz, and Exam policies:

1. We will have (roughly) one homework each week.
2. Strict due dates and timings will be enforced for homeworks, quizzes, and exams.
3. Write clearly. Illegible submissions will be given a score of zero.
4. We will use Gradescope for grading: <https://www.gradescope.com/>. You should be able to access it via Canvas.
5. **Homeworks** and **Exams** will be posted in Gradescope.
6. See these resources on how to submit a scan of your homework in Gradescope:
 - <https://help.gradescope.com/article/0chl25eed3-student-scan-mobile-device>
 - https://www.gradescope.com/get_started#student-submission
7. While submitting the scan, ensure that you match the question number to the page in your submission.
8. Your submission should have the problem number stated clearly in the margin.
9. You may refer to lecture slides while working out your solutions for homeworks, quizzes, and exams. Other solution sources are **NOT** permitted.
10. **Quizzes** will be in online format via Canvas. You can take the quiz any time in a 24-hour window. The 24-hour window will be announced at least 3 days before the start of the window. After you start, you will be given a duration of one hour to submit your answers.
11. **Exams** will be in take-home format. You can take the exam any time in a pre-specified 24-hour window. The 24-hour window will be announced at least a week before the start of the window. After you start, you will be given a pre-specified duration to submit your solutions. Exam submissions will be via Gradescope.
12. Ensure that you have good internet connection before you start **the quiz and the exam**. Re-attempts/late submissions will not be accepted.
13. Plagiarism will be dealt with severely. No credit will be awarded for the entire homework/quiz/exam (even if part of the solution for a problem is plagiarized).
14. Grading clarifications (in homeworks as well as exams) should be resolved within a week from the date of return of the graded submission. No clarifications will be entertained after a week. Bring your clarifications to the instructor's office hour if you would like to discuss.

15. Late homework/exam submissions: Late submissions will be allowed only for legitimate reasons. Legitimate reasons include athletic commitments (a letter from the athletics department is required), illness (a doctor's note is required), religious observances, and family emergency. Request for extension should be communicated to the instructor via email prior to the deadline.

Homework Collaboration policy:

1. **No collaboration on quizzes and exams.**
2. You are allowed to collaborate on homeworks. You may also choose to not collaborate.
3. Collaboration in homeworks is allowed in groups of two.
4. Write the name of your collaborator in the submission.
5. Each student should submit their own individual homework.
6. Collaborating beyond your mentioned partner will be considered as plagiarism. All collaborators will be penalized.

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!
- Practice problems will be posted in Canvas weekly. You do not have to submit solutions to these problems. Practice are to facilitate your own understanding. You are welcome to work them out and discuss them with the TA/instructor during office hours. We will NOT be posting solutions to these problems.
- Exam review problems will be posted in Canvas 10-12 days before the exam(s). You DO NOT have to submit solutions to these problems. I encourage you to work them out and bring doubts to the Review Problem Discussion session (which will be held during the lecture before the exam).
- You are encouraged to discuss lecture materials, practice problems and review problems with each other.
- **If you are starting to have difficulties in this course, please talk to me immediately during the office hour.** Waiting a bit will make it difficult 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 here: <https://studentcode.illinois.edu/article1/part4/1-401/>.

Mental Health: Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional well-being. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee. If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you.

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)
- If you are in immediate danger, call 911.

Community of Care: As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (217-333-0050 or <http://odos.illinois.edu/community-of-care/referral/>). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe. Further, as a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources.

Students with Disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor as soon as possible and provide the instructor with a Letter of Academic Accommodations from Disability Resources and Educational Services (DRES). To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should apply for services with DRES and meet the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to meet me or meet me during my office hour. DRES provides students with academic accommodations, access, and support services. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 217-333-1970, e-mail disability@illinois.edu or visit the DRES website at <http://www.disability.illinois.edu/>. Here is the direct link to apply for services at DRES, <http://www.disability.illinois.edu/applying-services>.

Disruptive Behavior: Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students ability to learn and an instructors ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office for Student Conflict Resolution (<https://conflictresolution.illinois.edu>; conflictresolution@illinois.edu; 333-3680) for disciplinary action.

Emergency Response Recommendations: Emergency response recommendations and campus building floor plans can be found at the following website: <https://police.illinois.edu/em/run-hide-fight/>. I encourage you to review this website within the first 10 days of class.

Religious Observances: Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. Students should communicate the request for extension regarding homeworks, quizzes, and exams owing to religious practices via email to the instructor. In order to best facilitate planning and communication between students and faculty, students should make requests for absence letters as early as possible in the semester in which the request applies.

Sexual Misconduct Reporting Obligation: The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>. Other information about resources and reporting is available here: <https://wecare.illinois.edu>.