

IE 400: Principles of Engineering Management – Fall 2022

- **Instructors:**

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- **Course Web Page:** TBA

- **Teaching Assistants:**

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Undergraduate Tutor: TBA

- **Class hours:**

Sec. 1 Mondays 10:30-12:20 (EA-Z03) and Wednesdays 15:30-17:20 (EA-Z03)

Sec. 2 Mondays 8:30-10:20 (B-Z05) and Wednesdays 13:30-15:20 (B-Z05)

Sec. 3 Tuesdays 10:30-12:20 (B-Z08) and Thursdays 15:30-17:20 (B-Z08)

In a typical week, all **four** reserved slots will be used. Please, see the detailed schedule given at the end of the syllabus.

- **Office hours:**

Sec. 1&2 By appointment.

Sec. 3 By appointment.

- **Prerequisites:** There are no formal prerequisites for this course. However, students will be expected to be comfortable with mathematics.
- **Recommended Textbooks:** We will not have a formal textbook in this course. Most of the material covered in this course (and much more!) is available in *Operations Research: Applications and Algorithms* by Wayne L. Winston, 4th edition, Thomson Brooks/Cole, 2004. The library has several copies (including earlier versions). For topics in engineering economy: *Contemporary Engineering Economics* by C. S. Park, 5th Ed., Prentice Hall, 2010 is a good reference.
- **Course Objectives:** This course is designed to develop an understanding of management decision making situations faced by engineers in designing, constructing, and operating engineering systems. The objective is to enable students to acquire knowledge and skills on methods and techniques developed for handling and solving problems encountered in such situations. The project assignment will help students gain hands-on experience with software to model and solve several classes of optimization problems.
- **Study Sets:** Study sets will be assigned prior to quizzes and the exams. Though they will not be collected or graded, it is strongly recommended that you work on these problems on your own since they will serve as an excellent educational tool and preparation for quizzes and exams.
- **Quizzes:** There will be a total of 4 scheduled quizzes during evening hours. The exact dates and places will be announced during the semester. **There is no make-up of the quizzes!** The lowest of these four grades will be dropped.
- **Project:** The project assignment (due sometime towards the end of the semester) will be a group project involving **at most 3** students from Sections 1, 2 and 3 combined. Please form your project groups as soon as possible and e-mail the names of your group members to *the Undergraduate Tutor*, by *TBA date*. Students who do not belong to any group by the deadline will solely be responsible from the project. The details of the project will be subsequently announced during the semester. We will mainly rely on LP/ MIP solvers such as CPLEX, Xpress, Gurobi to solve linear and integer programming problems formulated. A brief tutorial will be conducted on how to use the software (Specifically on Python/CPLEX and Python/Gurobi interaction) but you will be on your own in learning the details. **All** the group members are responsible from every step of the project. You will be called in for an oral exam to present the knowledge on the project.

- **Exams:** There will be one in-class midterm and an in-class comprehensive final exam some time during the final exam period. The exact dates and places will be announced during the semester.
- **Make-up Policy:** A make-up examination will only be given under highly unusual circumstances (such as serious health or family problems). The student should contact the instructor as early as possible and provide the instructor with proper documentation (such as a medical note certified by Bilkent University's Health Center).

The **comprehensive** make-up exam will be given before the final exam period.

- **Grading Policy:** Your overall score will be computed based on 20% project, 30% quizzes (10% each, the lowest grade will be dropped), 20% midterm exam, 30% final exam.
- **FZ Policy:** There is **no** FZ grade, everyone is entitled for the final exam.
- **Tentative Course Outline:**

- Introduction to Operations Research and Mathematical Modeling
- Linear Programming Models and Solution Techniques
- Integer Programming and Network Models and Solution Techniques
- Project Management via CPM/PERT
- Dynamic Programming
- Engineering Economy

	Section 1		Section 2		Section 3	
Week of	Mondays	Wednesdays	Mondays	Wednesdays	Tuesdays	Thursdays
September 12	No class	No class	No class	Lecture (2 hrs)	No class	Lecture (2 hrs)
September 19	Lecture (1 hrs)	Lecture (2 hrs)	Lecture (1 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
September 26	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
October 3 (Quiz 1)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	No class	Lecture (2 hrs)
October 10	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
October 17	No class	No class	No class	No class	No class	No class
October 24 (Quiz 2)	Lecture (2 hrs)	No class	Lecture (2 hrs)	No class	Lecture (2 hrs)	Holiday
October 31	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
November 7 (Midterm)	Lecture (2 hrs)	No class	Lecture (2 hrs)	No class	Lecture (2 hrs)	No class
November 14	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
November 21	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
November 28 (Quiz 3)	Lecture (1 hrs)	Lecture (2 hrs)	Lecture (1 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	No class
December 5	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
December 12	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)	Lecture (2 hrs)
December 19 (Quiz 4)	No class	Classes over	No class	Classes over	No class	Classes over
December 26 (Oral Exams)	TBA		TBA		TBA	

- **Rules:**

1. Please make sure that you have a STARS password and a valid e-mail in the STARS system. All of our communications will be conducted through the STARS system. Please check your **e-mail** regularly for announcements.
2. A **make-up** examination will only be given under extenuating circumstances (such as serious health or family problems). The student should contact the instructor as early as possible and provide the instructor with proper documentation (such as a medical note certified by Bilkent University's Health Center). The (comprehensive) make-up exam will be given during or right after the final exam period.
3. **No make-up will be given for quizzes under any circumstances.**
4. **Cheating will not be tolerated and will be severely penalized. Disciplinary action will be taken.**
5. **As a courtesy, please turn off your cell phones during class.**