ISE 330: Introduction to Operations Research: Deterministic Models
University of Southern California, Fall 2017

Prof. John Gunnar Carlsson

VKC 158
2:00 - 3:20 M/W

Office Hours
Tuesday 12:00 - 2:00
OHE 310F

1 Overview

This course is a basic introduction to important models and solution methods in Industrial and Systems Engineering (ISE). ISE is concerned with the modelling, analysis, and solution of complex decision problems that arise in the management or design of a large-scale industrial system such as a supply chain, transportation network, or manufacturing assembly line. This course will focus specifically on the modelling and solution of linear programs, dynamic programs, and integer programs, as well as additional applications thereof in transportation, logistics, supply chain management, among others.

2 Required Text

The required text for this course is:

- Hillier, Frederick S., and Gerald J. Lieberman. Introduction to Operations Research. 10th edition. McGraw-Hill, 2014.

Additional optional course readings may be taken from:

- Badiru, A. B., and O. Omitaomu. Handbook of Industrial Engineering Equations, Formulas, and Calculations. CRC Press, 2011. [available online at https://libraries.usc.edu/]
- Eiselt, H. A., and Carl-Louis Sandblom. Operations Research: A Model-Based Approach. 2nd edition. Springer, 2012. [available online at https://libraries.usc.edu/]
- Ravindran, A. Ravi. Operations Research and Management Science Handbook. CRC Press, 2007. [available online at https://libraries.usc.edu/]

3 Teaching Assistants

The teaching assistant for this course is:

- Ye Wang, wang141@usc.edu; Office hours: 2:00 - 4:00, OHE 310U

4 Course Requirements

Grading will be based on problem sets, an in-class midterm exam, an in-class final exam, and a final project. We will have 10 problem sets, all of which will be graded. Students may collaborate in groups of two or three on homework, but each student must write up their own assignments. In addition, students must write the names of all collaborators at the heading of each assignment. Assignments must be neatly written with all pages stapled together. Course grades will be broken down as follows:

Requirement	% of Grade
1. Midterm exam	30%
2. Final exam	30%
3. Final project	20%
4. Problem sets	20%

5 Class schedule

The approximate breakdown for course material follows below:

1. What are deterministic models?
2. Modelling an optimization problem
3. Linear programming
4. Solving linear programs
5. Linear programming duality
6. Dynamic programming
7. Integer programming
8. Game theory (time permitting)