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:


Additional optional course readings may be taken from:


3 Teaching Assistants

The teaching assistant for this course is:

- Lucky Cho, luckycho@usc.edu. Office hours: Monday 12:00 - 2:00 Monday, GER 309

4 Course Requirements

Grading will be based on problem sets, a midterm exam, a 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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>1. Midterm exam</td>
<td>30%</td>
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<tr>
<td>2. Final exam</td>
<td>30%</td>
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<tr>
<td>3. Final project</td>
<td>20%</td>
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<tr>
<td>4. Problem sets</td>
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</tbody>
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## 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. Network programming
9. Game theory (time permitting)
10. Inventory models (time permitting)