Course title and number    ISEN 320 Operations Research I
Term (e.g., Fall 200X)     Fall 2016
Meeting times and location TBD

Course Description and Prerequisites
Development and application of fundamental deterministic optimization models and solution methods; focus on quantitative modeling and formulation of linear, integer, and network flow problems; use of computer optimization software to model and solve real-life problems.
Prerequisites: MATH 304 or equivalent

Learning Outcomes
The student should
- be able to formulate and solve real-world problems and determine an appropriate modeling framework,
- be able to solve the models for their optimal solutions,
- be able to interpret and apply the solutions obtained in engineering decision making, and
- have an appreciation for a wide variety of applications of the methods developed.

Instructor Information
Name                 TBD
Telephone number     TBD
Email address        TBD@tamu.edu
Office hours         TBD
Office location      TBD

Textbook and/or Resource Material
Introduction to Mathematical Programming, 4th Edition by W. L. Winston and M. Venkataraman;

Other Textbook Options:


Grading Policies

Homework Assignments and Quizzes: 25%

Exam 1: 25% (around week 5 of the semester)

Exam 2: 25% (around week 10 of the semester)

Final Exam: 25% during the week of finals

Grades assigned are A for 90%–100%, B for 80%–89.9%, C for 70%–79.9%, D for 60%–69.9% and F for less than 60%.

Attendance and Make-up Policies

Class attendance is not optional. You are expected to attend all class lectures except for university excused absences. Make-up for the exams and quizzes will be offered only in case of a university excused absence. The university rule regarding excused absences can be found at http://student-rules.tamu.edu/rule07.

Course Topics, Calendar of Activities, Major Assignment Dates

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<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
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<td>Introduction, simple linear programming (LP) formulations, graphical solution of LP</td>
<td>Chapters 1, 3.1-3.3</td>
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<td>2</td>
<td>Basic LP Formulations</td>
<td>Chapter 3.4-3.12</td>
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<tr>
<td>3</td>
<td>Advanced LP Formulations</td>
<td>Chapter 3.4-3.12</td>
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<td>4</td>
<td>Basic integer programming (IP) formulations</td>
<td>Chapter 9.1</td>
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<td>5</td>
<td>Advanced IP formulations</td>
<td>Chapter 9.2</td>
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<tr>
<td>6</td>
<td>Exam 1, Entry level software to solve LPs and IPs</td>
<td>Chapter 4.17 and handouts</td>
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<td>7</td>
<td>Advanced level software to solve LPs and IPs</td>
<td>handouts</td>
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<td>8</td>
<td>Advanced level software to solve LPs and IPs continued; Graphical sensitivity analysis of LP</td>
<td>Chapter 5.1</td>
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<td>9</td>
<td>Managerial applications of sensitivity and shadow prices</td>
<td>Chapter 5.2-5.3</td>
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<td>10</td>
<td>Managerial applications of sensitivity and shadow prices continued, Exam 2</td>
<td>Chapter 5.2-5.3</td>
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<td>Basic formulations of network flow problems</td>
<td>Chapter 7.1</td>
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<td>12</td>
<td>Advanced formulations of network flow problems</td>
<td>Chapter 8.1-8.3, 8.5</td>
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<td>13</td>
<td>Simplex method</td>
<td>Chapter 4.1-4.8</td>
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<td>14</td>
<td>Simplex method continued</td>
<td>Chapter 4.11-4.14</td>
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Final exam during finals week

Other Pertinent Course Information

The course will use computational tools to solve larger problems. Handouts for MATLAB will be provided. Students are expected to apply prior knowledge of MATLAB in this course.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

Academic Integrity

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Ignorance of the rules does not exclude any member of the Texas A&M University
community from the requirements or the processes of the Honor System. For additional information please visit: http://student-rules.tamu.edu/; http://student-rules.tamu.edu/aggiecode; and http://student-rules.tamu.edu/rule20. The complete information of university regulations regarding the handling of academic misconducts (including the appeal process) can be found at http://aggiehonor.tamu.edu/.

I, <insert instructor name>, as the rest of the Industrial & Systems Engineering Faculty, uphold the Aggie Honor Code as an axiom of our academic excellence. We consider its sincere observance to be essential for membership in our department and Texas A&M. We extend you the trust conferred to those who faithfully adhere to our honor code. Abuse of this trust is intolerable, thus I will report and assign an extreme penalty to those who do not stand with us in preserving the integrity symbolized by the Aggie Honor Code, “An Aggie does not lie, cheat, or steal or tolerate those who do.”

In this course the penalty for any violation of the Aggie Honor Code, as minimal as it may be, is F*.