

# IE 3390– Operations Research I – FALL 2015

**Instructor:** Dr. Heidi A. Taboada

Location and Time: MW: 9:30 - 10:50 am Room: Liberal Arts Building 222  
Office: A241, Department of Industrial, Manufacturing & Systems Engineering  
Office Hours: Tuesdays and Thursdays from 9:30-10:30am, or by appointment  
Email: [hataboada@utep.edu](mailto:hataboada@utep.edu)  
Course Homepage: [blackboard](#)

## Course Description:

This course covers an introduction to deterministic optimization models. Topics include the concepts of operations research modeling, classical optimization, linear and integer programming, and network analysis. An introduction to combinatorial optimization is also presented. A project is an integral part of this course.

The course has the following **educational objectives** for students:

- To become familiar with the major concepts of operations research, such as linear programming, the simplex algorithm and its computer implementation, sensitivity analysis, transportation problems, integer programming, and combinatorial optimization.
- To develop skills for identifying; formulating, solving, and interpreting appropriate models.
- To understand how the mathematical concepts are applied in the real-world and to learn to effectively use computing software to solve more complicated problems such as they arise in the real world.
- To learn to more effectively communicate mathematical ideas to others and to become more comfortable and effective working in a team setting.
- To become a more independent learner and logical thinker.

## Major reference:

- Class notes
- Textbook: "Operations Research: An Introduction", by Taha, Hamdy A. 9th Edition, Prentice Hall.

## Other useful references:

1. "Introduction to Operations Research," by Hillier, Lieberman., 8th edition, McGraw-Hill.
2. "Operations Research: Applications and Algorithms", by Winston, Wayne L. 4th edition, Duxbury Press.

## ABET Outcomes:

IE 3390 specially addresses outcomes a, e, and j as defined in ABET materials

ABET Outcomes:	
a	An ability to apply knowledge of mathematics, science, and engineering to solve industrial engineering problems in varied sectors of industry
e	An ability to identify, formulate, and solve industrial engineering problems
j	Familiarity with current and emerging topics in industrial engineering

**Topics to be covered:**

1. Modeling with linear programming
2. Linear programming
3. Integer programming
4. Network optimization
5. Transportation methods
6. Introduction to Artificial Intelligence
7. Metaheuristic optimization (from research papers)
8. Programming with Matlab

**Grading:**

Exam 1	30%
Exam 2	30%
Final Project	25%
Homework/Case studies/Lab assignments	15%

The most likely time of the evaluations will be:

- Exam 1: Last week of September (or first week of October)
- Exam 2: First or second week of November
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**Late Work Policy:**

Late homework or reports will not be accepted, unless certified medical proof is given. If you are unable to attend the class at which the homework is due, it is your responsibility to submit it earlier.

**Attendance Policy:**

Attendance to all sessions is strongly recommended. Students are responsible for all of the material covered in the class.

**Cell Phones:**

Please turn cell phones off during class.

**Students with disabilities:**

Students with disabilities or who suspect they have a disability may wish to self-identify for purposes of modifications. You can do so by providing documentation to the Office of Disabled Student Services located in the UTEP Union. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or director of the Disabled Student Services. For general information about the American with Disabilities Act (ADA), please call 747-5184.

**Academic Misconduct:**

No collaboration of any kind is permitted during any of the examinations, homework, or quizzes. All suspected cases will be treated according to the University Policy as stated in the Catalog and the Student Handbook. A spirit of pride, collegiality and service is expected in all what we do.