

CEE 4760/5760 - Optimization Methods in Civil & Environmental Engineering

Semester: Spring 2018

Instructor: David Watkins, Ph.D., P.E.

Prerequisites:

- Undergraduate students: (MA2320 or MA2321 or MA2330) and (MA2720 or MA3710).
- Graduate students: None.

Course Location: Dillman 214

Class Times: MWF 2:05-2:55 PM

Course Description:

This course is an introduction to Operations Research with an emphasis on optimization methods for both senior undergraduate and graduate students. Students will learn optimization and decision analysis techniques and tools that they can apply to their own fields. Applications will include infrastructure system design, construction management, resource allocation, waste management, business operations, transportation logistics, and supply chain management.

Students will use a number of optimization tools (e.g., AMPL, MATLAB, and Excel) in the class. Grades will be based on written homework, modeling assignments, and exams. Graduate students will complete a final term project that applies optimization methods to a practical problem in their major or specialty area.

By the end of this course, students will: 1) understand basic optimization theories and algorithms, 2) formulate real-world problems as mathematical models, 3) generate solutions and trade-offs using optimization tools, 4) analyze and interpret results, and 5) evaluate decisions.

Please contact Dr. David Watkins (dwatkins@mtu.edu) for more information.

