

# **IEMS 294 Professional Practice Studio**

Prerequisites: DTC 1 and DTC 2

Instructor: Mike Watson

## **Course Description**

This course develops the professional and analytical skills required for successful industrial engineering project work. Students learn how to scope problems, conduct relevant background research, select appropriate models and methods, perform simple analysis, and communicate results through clear writing, effective visualizations, and compelling narratives. The class will use many short cases and applied exercises to teach concepts. No previous IE courses are required. The course is meant to prepare students for internships, the Client Project Challenge (CPC) class, other IE classes, and their careers.

## **Learning Objectives**

By the end of this course, students will be able to:

- Frame ill-defined problems as tractable engineering projects
- Conduct targeted background research without over-engineering or reinventing existing solutions
- Scope projects and select appropriate models under time and data constraints
- Communicate technical work clearly through professional writing, visualization, and storytelling
- Develop narratives and deliverables tailored to different audiences and industries
- Apply industrial engineering thinking to short, high-impact analytical cases

## **Topics Covered**

- **Problem Framing and Project Scoping**
  - Objectives, decisions, and uncertainty

- Model and method selection
- Fast approximate and spreadsheet-style modeling
- **Background Research for Engineering Projects**
  - Identifying relevant prior work
  - Avoiding irrelevant or overly technical sources
- **Professional Writing and Communication**
  - Writing clearly for technical and non-technical audiences
  - Iterative writing exercises and feedback
- **Data Visualization**
  - Principles of effective visualization
  - Visualizing results for decision-making
- **Storytelling and Narrative Development**
  - Crafting analytical stories with strong recommendations
  - Industry-specific presentation styles (consulting, finance, technology, and others)

## **Assignments**

- Mini case studies to highlight
  - Background research
  - Problem framing
  - Objectives, decisions, and Model selection
  - Approximate modeling
  - Writing clearly
- Visualization
  - Creating visualizations with tools and critiquing visualizations
- Elevator and Final Presentation Exercises

- Live presentations with feedback

## **Materials**

- *Storytelling with Data* by Cole Nussbaumer Knaflic
- Tufts (<https://sites.tufts.edu/datalab/learning-visualization-design/>)
- *Show Your Work* by Austin Kleon
- Short case studies and applied exercises developed by course instructors