

IE 425: Plant Location and Layout – 2021-2022 Spring

Instructor: Meltem Peker Sarhan

Contact Information: Office IE 334

Prerequisites: IE251, IE333

Course description:

Introduction to the planning and the design of facilities. Analytical methods for facility location and layout analysis. Organization of data for facilities design. Analysis of product and process designs. Identification of production support activities. Design of layout and materials handling systems.

Course objectives:

At the end of the course, the students will

- understand basic modeling issues in facility location and facility logistics.
- be comfortable with facility design and planning.
- learn analytical methods to formulate the location and layout problems.
- be equipped with facility location and logistics solution approaches.

Course Outline:

- Facility Location and Layout Basics
- Facility Location
 - Classification of location problems
 - Planar location problems
 - Minisum and minimax problems
 - Location-allocation problems
 - Network and discrete location problems
 - Median, center, covering, fixed-charge problems
- Product and process designs
- Facility Layout
 - Product and flow analysis
 - Flow analysis, activity analysis
 - Layout design approaches
 - Quadratic assignment problem
 - Design tools (Systematic Layout Planning, computerized procedures, graph-based methods)
- Storage and Warehouse systems
- Extended location and facility design problems

Supplementary textbooks:

Heragu, S.S. Facilities Design, CRC Press, 2008.

Garcia-Diaz, A., Smith, JMG. Facilities Planning and Design, Prentice Hall, 2008.

Francis, R.L., McGinnis, L.F., and White, J.A. Facility Layout and Location: An Analytical Approach, Prentice Hall International, 1992.

Tompkins, J.A., White, J.A., Bozer, E.H., Tanchoco, JMA. Facilities Planning, Wiley, 2002.

Grading:

Midterm	29%
Final exam	35%
Assignments (4)	16%
Cases (2)	20%
Total	100%