

Grade FZ (taken from IE102 Syllabus) – You have to hand in all the homework. Otherwise, you receive an FZ.

IE102 Fall 2019 Homework VI - Due: 9 December, Monday until 10:30 am.

IMPORTANT: READ BEFORE YOU START WORKING ON THE HOMEWORK

Information on Homework VI

- Homework VI is 1% Make sure that you review course material before you start. Cite sources used if any.
- Homework assignment will be conducted in groups of 2. We randomly form the groups. You can find your group member and his/her contact information in the e-mail. **If you cannot reach your group member by all means, indicate this on the cover page of your submission.**
- Grading Policy: The grading scale for each question is 2 points (correct), 1 point (partially correct), and 0 (no effort or no submission).
- Academic Dishonesty (taken from IE102 Course Information): **Academic misconduct is not tolerated, and violations will be treated in accordance with the university policy.** For assignments: Discussion of the course material and working in groups are effective ways of learning. However, this does not mean that you can copy the assignment from one of your friends. You can discuss with your friends, but you should be alone, without any written solution in front of you, when you actually prepare your assignment. It is extremely important to understand the value of this exercise in the process of learning. Any violation of the above understanding will result measures outlined in the student rules and regulations.
- Submission Information: An assignment submission box will be placed in front of office EA305 on the morning of the submission date and will be removed at the time of the deadline. You need to put your assignment in the designated box before the submission deadline. **Submission via e-mail is NOT accepted.**

Contact TA Serife Yetişkin if you have questions related to this HW:

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Question 1: A manufacturer of furniture (FURNY) has a plant located in Manisa. It sells products through six cities: İstanbul, Bolu, Çankırı, Edirne, Kastamonu and Antalya. FURNY is working contract based and therefore knows how many customers it should serve at each of these 6 cities. This information is given below:

	İstanbul	Bolu	Çankırı	Edirne	Kastamonu	Antalya
Number of Customers	100	90	120	80	150	110
Distance from Mersin	35	385	331	394	316	562

The company has enough budget to open two new plants if it shuts down the leased Mersin factory. The candidate locations for these new factories are: Adana, Afyonkarahisar, Burdur and Van. The distance matrix of these new locations and the set of customer locations is as following:

	İstanbul	Bolu	Çankırı	Edirne	Kastamonu	Antalya
Adana	126	520	452	477	108	597
Afyonkarahisar	326	212	526	144	100	256
Burdur	325	95	271	152	177	385
Van	211	251	421	217	139	367

- Calculate FURNY's total weighted distance for the current case (The factory is at Mersin).
- Use the heuristic method discussed in class to find “good” locations for the new factories while trying to minimize the total weighted distance.
- Identify the best minimum weighted distance locations of two new factories by using the enumeration method discussed in class.

Note: For parts b and c, clearly indicate the cities served by each open factory.