| Course title: Dominant Sets of Graphs and their Applications | Neptun code: GEMAK418-a |
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| Course coordinator: Dr. József Túri, PhD, associate professor |
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| type of lesson and number of lessons: **lecture (2)** |
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| method of evaluation: colloquium |
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| curriculum location of the subject: (autumn/spring semester): autumn and spring |
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| pre-study conditions *(if any)*: - |
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**The task and purpose of the subject:**

The aim of the course is to familiarize students with dominant set of graphs and we show there applications.

**Course description:**

The course examines the dominant sets of graphs. By showing that although it is relatively easy to find a dominant set with a smaller number (even a minimal dominant set) in simpler graphs, as the graph grows (both its degree and the number of edges), it becomes more and more difficult to find dominant sets with a small number, especially those with a minimum degree. However, there are certain estimates and algorithms for soving the problem, and these are presented in the course. After getting to know the estimates and algorithms, their technical applications and applicabiity will be presented.

**Required literature:**

1. Balogh, József; Katona, Gyula O.H.; Linz, William; Tuza, Zsolt, The domination number of the graph defined by two levels of the n-cube, II, European J. Combin. 91, (2021), Paper No. 103201, 10 pp.

2. Ding-Zhu Du, Peng-Jun Wan, Connected Dominating Set: Theory and Applications, Springer, 2013.

3. Michael A. Henning, Anders Yeo, Total Domination in Graphs, Springer, 2013.

4. Bujtás, Csilla; Henning, Michael A.; Tuza Zsolt, Transversals and domination in uniform hypergraphs, European J. Combin. 33, (2012), no. 1, 62-71.

**Recommended literature:**

1. Bacsó, Gábor; Tuza, Zsolt, Distance domination versus iterated domination, Discrete Math. 312, (2012), no. 17, 2672-267.