Course title: GOA Sets of Graphs and their Technical Applications	Neptun code: GEMAK419-a
Course coordinator: Dr. József Túri, PhD, associate professor	
type of lesson and number of lessons: **lecture (2)**	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions *(if any)*: -	

The task and purpose of the subject:

The aim of the course is to familiarize the students with GOA sets of graphs, which can be used to model several technical problems.

Course description:

The course examines GOA stets of graphs. By showing that although it is relatively easy to find a GOA 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 minimal degree. However, there are certain estimates and algorithms for solving the problem, and these are presented in the course. After getting to know the estimates and algorithms, their technical applications and applicability will be presented. The course compares the dominant and GOA sets of graphs, and examines the relationship between the two types.

Required literature:

1. Juárez Morales, José Ángel; Romero Valencia, Jesús; Juárez Morales, Raúl; Rayna Hernández, Gerardo, On the offensive alliance number for the zero divisor graph of Zn Math. Biosci. Eng. 20 (2023), no. 7, 12118-12129.

2. Mojdeh, Doost Ali; Samadi, Babak; Yero, Ismael G., Global offensive k-alliances in digraphs Bull. Inst. Combin. Appl. 97, (2023), 67-82.

3. Bouzefrande, Mohamed; Bouchemakh, Isma; Zamime, Mohamed; Ikhlef-Eschouf, Noureddine, Trees with unique minimum global offensive alliance, RAIRO Oper. Res. 55, (2021), S863-S872.

Recommended literature:

1. Rad, Nadrer Jafari, A note on the global offensive alliances in graphs Discrete Appl. Math., 250 (2018), 373-376.

2. Bouzefrane, Mohamed; Ouatiki, Saliha, On the global offensive alliance in unicycle graphs AKCE Int. J. Graphs Comb., 15 (2018), no.1, 72-78.