

## Tárgytematika / Course Description Logistic Simulation Programmes

AJNM\_LSTA006

Tárgyfelelős neve /

Teacher's name: dr. Bódis Tamás

Félév / Semester: 2023/24/2

Beszámolási forma /

Assesment: Vizsga

Tárgy heti óraszám /

Teaching hours(week): 2/2/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

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### OKTATÁS CÉLJA / AIM OF THE COURSE

This course provides an introduction into the theory of simulation programs. The course starts with an experimental test demonstrating the need for mathematical approach to the solution of real life problems. The students will learn a methodology of mathematical modelling of problems appearing in the field of logistics. They develop the ability to deal with simulation and optimization problems. By the end of the course the students will have a basic knowledge of the algorithms applied in simulation programs.

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### TANTÁRGY TARTALMA / DESCRIPTION

#### Lecture topics:

1. Beer distribution game – an experimental study of supply chains.
2. Analysis of the results.
3. The methodology of modelling.
4. A basic model of supply chains I.
5. A basic model of supply chains II.
6. The space-time approach in the modelling of supply chains. Excel table analysis.
7. Simulation of supply chains by Excel programs.

8. Instability in supply chains. A stability analysis.
9. Case study of a basic optimization problem.
10. Model development.
11. Extremum search via Excel tables.
12. Changing the initial conditions and parameters. Constrained problems.
13. Introduction into Genetic Algorithms.
14. Optimization with Genetic Algorithms.

**Seminar topic:**

1. What is simulation
2. Steps of a simulation project
3. The Plant Simulation software
4. Base objects in Plant Simulation
5. Base objects in Plant Simulation
6. Collation of personal projects, creating of base modell
7. Creating of base modell
8. Creating of base modell
9. Creating of base modell
10. Consultation

11. Consultation
12. Consultation
13. Consultation
14. Optimalizációs modellprobléma megoldása bakteriális algoritmus használatával.
15. Give in of personal projects

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## **SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**

The prerequisite for applying for an exam is a sufficient practical mark. The examination is done in writing. The evaluation is done as follows:

**0-50 insufficient, sufficient 51 -60, moderate 61 - 70, good 71 - 85, 86 -100 excellent**

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

**Warehouse & Distribution Science by J. Bartholdi and S. Hackman**

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## **AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL**