Óbudai University Donát Bánki Faculty of Mechanical and Safety Engineering			Institute of Mechatronics and Vehicle Engineering	
Course name and Neptun-code: System Engineering BMXRTE3BNF **Credits*: 4*** *Full time, 1st Semester of the Academic year 2024/25*				
Faculties in which the subject is taught: **BSc in Mechatronics**				
Supervised by:	Prof. Dr. Pokorádi László full professor	Lecturer:	Prof. Dr. Pokorádi László full professor	
Prerequisites conditions	Mathematics II.			
Lessons per week	Theory: -	Classroom practice.: **2**	Labor: **1**	Consultation:
Exam type (s,v,f):	**exam**			

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Aim: Development of engineering and problem-solving thinking, presentation of the tools of mathematical modeling required for engineering work, acquisition of basic modeling and systems analysis methods.

Schedule

Week	Topics
1.	Theoretical Background
2.	Parameters & Signals
3.	Dimensions of Parameters
4.	Classification of Systems
5.	Models
6.	Mathematical Modelling I.
7.	Mathematical Modelling II.
8.	Dimensional Analysis
9.	Description of physical processes
10.	Graphs & Networks
11.	Deterministic System's Modelling
12.	Application of Models
13.	Monte-Carlo Simulation
14.	Retake

Literatures:

1. Pokorádi László – Szabolcsi Róbert: Mathematical Models Applied to Investigate Aircraft Systems. Budapest: Mûegyetemi Kiadó, 1999. 146 p. Monographical Booklets in Applied and Computer Mathematics; 12. ISBN:ISSN 1417 278 X.
2. ALBERT-LÁSZLÓ BARABÁSI: Network Science, https://barabasi.com/book/network-science
3. Applied Dimensional Analysis and Modeling, Kindle Edition
4. System Book, http://sysbook.sztaki.hu/bevezeto_en.php
5. Moodle electronic materials