



1. Subject name	Discrete event systems with traffic applications (PhD)				
2. Subject name in Hungarian	Diszkrét eseményű rendszerek és közlekedési alkalmazásaik (PhD)				
3. Code	BMEKOKAD015	4. Evaluation type	exam grade	5. Credits	3
6. Weekly contact hours	2 (0) Lecture	0 (0) Practice	0 (0) Lab		
7. Curriculum	PhD Programme	8. Role	Specific course		
9. Working hours for fulfilling the requirements of the subject					90
Contact hours	28	Preparation for seminars	6	Homework	24
Reading written materials	6	Midterm preparation	16	Exam preparation	10
10. Department	Department of Control for Transportation and Vehicle Systems				
11. Responsible lecturer	Dr. Hangos Katalin				
12. Lecturers	Dr. Hangos Katalin				
13. Prerequisites					
14. Description of lectures					
<p>Basic concepts and techniques for describing discrete-event systems: discrete-event systems theory, Petri nets and automata, qualitative difference equations, rules and rule systems with time-dependent predicates, inference and search, graph-type models, effect graphs</p> <p>Solving discrete-event system models, availability graph. Dynamic analysis of discrete-event systems: constraint, availability analysis, dead ends.</p> <p>Model-based generation and verification of discrete control sequences. Direct and prediction diagnostics based on discrete-event system models.</p> <p>Generalization of discrete-event system models to describe different classes of hybrid systems.</p>					
15. Description of practices					
16. Description of laboratory practices					
17. Learning outcomes					
A. Knowledge					
<ul style="list-style-type: none"> The subject knowledge provides high-level theoretical knowledge to PhD students intending to delve into transport science to solve modeling, dynamic analysis, diagnostic, and control tasks in transport systems that can be described as discrete events 					
B. Skills C. Attitudes D. Autonomy and Responsibility					
18. Requirements, way to determine a grade (obtain a signature)					
An individual task for modeling and dynamic analysis of a simple discrete event transport system. The prerequisite for obtaining the signature and for passing the exam is the complete and timely submission of the individual student assignment. The exam is oral.					
19. Opportunity for repeat/retake and delayed completion					
20. Learning materials					
1. C. G. Cassandras, S. Lafortune: Introduction to Discrete Event Systems. Springer, 2008.					
2. Lakner R., Hangos K., Gerzson M.: Intelligens irányító rendszerek. Tzpotex Kiadó, Bp. 2011. pp. 1.-87.					
Effective date	27 November 2019	This Subject Datasheet is valid for		Inactive courses	