



1. Subject name	Machine Intelligence				
2. Subject name in Hungarian	Intelligens gépek				
3. Code	BMEKOALM644	4. Evaluation type	exam grade	5. Credits	4
6. Weekly contact hours	2 (10) Lecture	2 (11) Practice	0 (0) Lab		
7. Curriculum	Vehicle Engineering MSc (J)	8. Role	Specialization (sp) at Vehicle Engineering MSc (J)		
9. Working hours for fulfilling the requirements of the subject					120
Contact hours	56	Preparation for seminars	12	Homework	15
Reading written materials	17	Midterm preparation	0	Exam preparation	20
10. Department	Department of Material Handling and Logistics Systems				
11. Responsible lecturer	Dr. Szirányi Tamás				
12. Lecturers	Dr. Szirányi Tamás, Bohács Gábor, Rózsa Zoltán				
13. Prerequisites					
14. Description of lectures					
The subject has the purpose of extending the knowledge of the students about the following topics: origin and areas of artificial intelligence; expert systems, fuzzy systems, neural networks; basic methods of image processing and shape recognition; basic methods of identification and biometrics; path planning, navigation and control of mobil robots; autonom mobile machines and automated guided vehicles.					
15. Description of practices					
During the practice the students are solving examples about the topic of the lectures.					
16. Description of labortory practices					
17. Learning outcomes					

**A. Knowledge**

- Knowing the processes, typical structures and elements of intelligent machines.
- Having comprehensive knowledge about the different areas of artificial intelligence.
- Knowing the computational description of images and their fundamental properties.
- Knowing the basics of shape recognition.
- Knowing the fundamental biometrics.
- Knowing the topics of gait and speech recognition.
- Knowing the decision making techniques.
- Having comprehensive knowledge about mobil robot navigation and control.
- Knowing the different types of autonom machines and their properties.

**B. Skills**

- Being able to apply the knowledge in tasks related to mobil robots.
- Application of decision making methods.
- Being able to apply of different shape recognition algorithms.
- Being able to solve selection, navigation and routing problems.
- Being able to solve the problems alone or in group and efficiently transfer the knowledge.
- Having original/innovative ideas.

**C. Attitudes**

- Working efficiently alone and in group.
- Seeking for relations to other subjects.
- Being open to use mathematical and informatic tools.
- Seeking to know and learn the necessary tools.
- Seeking to solve the problems accurately and error-free.

**D. Autonomy and Responsibility**

- Finding solutions alone.
- Taking into considerations the effects of the decisions.
- Applying systematic approach.

#### 18. Requirements, way to determine a grade (obtain a signature)

The evaluation of the learning results is based on the written (homework) and oral (oral exam) performance. Students must complete a homework assignment during the semester. At the end of the semester, the requirement is to submit the task at a minimum level. The exam pass is 30% based on the homework and 70% on the oral examination.

#### 19. Opportunity for repeat/retake and delayed completion

The homework can be corrected until the end of the week of examinations.

The oral exam can be re-take first free of charge. The second and higher re-take of the same subject has charge regulated by the university.

#### 20. Learning materials

Moodle online notes provided by the department; Bernd Jahne: Digital Image Processing, 5st edition, Springer, Heidelberg, 2002; W. K. Pratt: Digital Image Processing, Wiley, 200- ; Kató Zoltán, Czúni László: Számítógépes látás, Typotex, 2011; Anil K. Jain, Patrick Joseph Flynn, Arun A. Ross: Handbook of Biometrics, ISBN 978-0-387-71040-2; Horváth Gábor: Neurális hálózatok és műszaki alkalmazásai, ISBN: 9634205771

<b>Effective date</b>	10 October 2019	<b>This Subject Datasheet is valid for</b>	Inactive courses
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