Részletes tantárgyprogram és követelményrendszer

Óbuda University Bánki Donát Faculty of Mechanical and Safety Engineering	Institute of Mechatronics and Vehicle Engineering

Course title and code: *Intelligent Engineering systems* Credits: 4			
Full-time, 4th semester			
Faculties in which the subject is taught: **mechatronics engineer MSc**			
Supervised by:	Judit Dr. Lukács	Instructors:	Judit Dr. Lukács
Prerequisites conditions:	**Fuzzy systems**		

Lessons per week:	Theory: 2	Practice (in Auditorium): 0	Laboratory: 0	Consultation:

Exam type (s,v,f):	exam

Syllabus

Aim: This course aims to reveal the opportunities provided by soft computing methods by getting familiar with fuzzy set theory and fuzzy logic, approximate reasoning, neural and deep neural networks, evolutionary algorithms, and some more biologically inspired systems in terms of engineering applications.

Topics:		Lec.	Lab
Week 1 14/02	Introduction: comparison of hard and soft computing methods. Artificiel intelligence	2	0
Week 2 21/02	Proposition, logical connectives	2	0
Week 3 28/02	Implications and tautologies	2	0
Week 4 06/03	Approximate reasoning	2	0
Week 5 13/03	Introduction to neural networks	2	0
Week 6 20/03	RNN and CNN	2	0
Week 7 27/03	Introduction to metaheuristics	2	0
Week 8 03/04	Genetic algorithms	2	0
Week 9 10/04	Simulated annealing. Ant colony algorithm	2	0
Week 10 17/04	Introduction to information theory	2	0
Week 11 24/04	Shannon entropy. Decision trees	2	0
Week 12 01/05	National holiday	2	0
Week 13 08/05	Summary, Test	2	0
Week 14 15/05	Test retake	2	0

Semester requirements
Theory test.

Method of the replacement:

During the semester, the signature requirements can be **replaced** in the following cases: test failed; illness.

Calculation of the final garde:

All main areas of the course are evaluated by test papers. The course is to be considered successfully executed and a **signature** is obtained if and only if test result reaches a level of 51%.

Signature is **denied** if the student cannot justify the absence for the test, has failed to write the test, or absences exceed the number of classes specified in TVSZ.

Exam method: Oral exam

Literature:
Mandatory: lecture notes
Offered: Chen, G., & Pham, T. T. (2005). *Introduction to fuzzy systems*. CRC Press.