UNIVERSITY of DEBRECEN

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Name of the course:	**Cognitive Control of Cyber-Physical Systems**
Course type:	Optional
Responsible lecturer:	Dr. Péter Korondi
Content:	The subject matter aims to take the approach, methods, and mathematics of the data and information processing of the mechatronic sensors and actuators, and it deals with areas that are closely related to human cognition and thinking activities, so it goes beyond purely engineering fields. This includes multipurpose sensor behaviours, such as radar, optical, sound, and infrared, and the detection, tracking, identification/recognition of the target motion, activities followed by the description of the required interface for human-machine control. To do this, it is necessary to collect advanced know-how on Cyber-Physical System cognitive skills supported by state-of-the-art definitions and key principles of system-state machine optimisation, as well as related signal-, data processing, and mathematical descriptions. Based on this knowledge the candidate demonstrates for example the possibilities of using artificial intelligence and evaluates its advantages, disadvantages
Literature:	• Illyes, Kornel; Kiss, Eszter; Novak, Adam; Skublics, Imre; Balajti, Istvan: Optimizing microstrip antennas and antenna arrays using evolutionary algorithms In: IEEE (szerk.) 2022 IEEE 20th International Power Electronics and Motion Control Conference (PEMC) [s.l.], Nemzetközi: IEEE (2022) pp. 530-535., 6 p. • Masuk, Abdullah; Istvan, Balajti: Mechatronics Engineering Aspects of VHF band Antenna Design of Industry 4.0 Applications In: IEEE, Computer Society (szerk.) 23rd Proceedings International Radar Symposium, Gdansk, Lengyelország: Warsaw University of Technology (2022) pp. 88-93., • P. Korondi, Péter; Korcsok, Beáta; Kovács, Szilveszter; Niitsuma, Mihoko: Etho-robotics: What kind of behaviour can we learn from the animals? IFAC PAPERSONLINE 48: 19 pp. 244-255. , 12 p. (2015) • Korondi, Péter; Bjørn, Solvang; Baranyi, Péter: Cognitive Robotics and Telemanipulation