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Name of the course:	**Measurement and Signal Processing**
Course type:	Optional
Responsible lecturer:	Dr. István Balajti
Content:	The aim of his course is to further strengthen the approaches developed at the undergraduate level and introduce additional methods of the state-of-the-art antenna measurement theory to enable the use of scientifically proven up-to-date signal- and data processing technics and develop conclusions on the related researched subject.
	Systems performance measurement theory and methods are presented by sensor-actuator equipment of mechatronics for applications in " Anechoic Chamber" and in "in-situ" for environment-disturbed cases. It presents the description of the structures, advanced sensing directions growth, and state-of-the-art signal processing methods of multipurpose sensor systems.
	Examines the applicability of the Central Limit Theorem, the multidimensional covariance and correlation coefficient matrixes, the fast Fourier/Hartley transformation, the expediency of using the Kalman filter, extended Kalman filter, Particle filter, Bessel, and "nonparametric decision" functions based on the measurement result test performance criteria.
	It introduces a few robust effective procedures for signal processing of sensor-actuator-related measurement methods.
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., 6 p
	• Balajti István: Performance Measurements of the Radar "In Situ", IEEE, Microwaves, Radar and Remote Sensing Symposium, 2008. MRRS 2008, Piscataway (NJ), USA, Institute of Electrical and Electronics Engineers (IEEE) (2009) pp. 334-339, 6 p. WoS: 4	Scopus: 6	
	• Istvan, Balajti: Air Surveilance Radar Antenna Performance Management at Hungarocontrol: What is the purpose of the Antenna Measurement In-Situ, Repüléstudományi Közlemények 29: 3, pp. 55-70. Paper: 1789- 770X, 15 p. (2017)
	• István, Balajti: Overview of the International Radar Symposium Best Papers, 2019, Ulm, Germany, REPÜLÉSTUDOMÁNYI KÖZLEMÉNYEK 31: 3 pp. 31-63., 33 p. (2019)
	• Korondi, Péter; Korcsok, Beáta; Kovács, Szilveszter; Niitsuma, Mihoko: Etho-robotics: What kind of behaviour can we learn from

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- L. Györfi: Nonparametric Decision, e-Book, NKE/KÖFOP-2.1.2-VEKOP-15 2016-00001, 2017 http://www.szit.bme.hu/~gyorfi/bookdecision.pdf