Name of the subject: **Mechatronic System Diagnostics**	*NEPTUN-code:* *BGRMD1ENND*	Credits: 3 ECTS: 4
Subject leader: Dr. József Szabó	*Title:* ass.prof.	
Course description:		

Understanding diagnostics. Industrial production and diagnostics. Connections between maintenance and diagnostics. Methods and processes of diagnostics. Systems of mechatronics in the industry.
The most common faults in mechatronics, typical ways of failures.
Traditional maintenance strategies, and ways of operation. Run to failure, planned preventive maintenance, condition monitoring based maintenance strategies. Modern maintenance philosophies: RCM, TPM, TQM, RBI.
Theory of vibration – part I. Understanding vibrations. Damped and undamped vibrations. Time of period, frequency, amplitude and phase, time signal and frequency spectrum.
Processing of vibration signals. Instruments of vibration measurements. Faults monitored by vibration diagnostics. Case histories and measurement practices.
In situ balancing of rotating machinery. Basics of theory and practical applications, using a test rig.
Understanding shaft alignment. Theory and application.
Theory of electromagnetic waves. Methods of non destructive testing (NDT), like X-Ray, isotope radiation. Theory and practical applications.
Understanding endoscopy. Theory and practice. Case histories.
The role of thermography in diagnostics. Understanding non contacting temperature measurements. Theory of thermovision. Examples of practical application.
Understanding noise diagnostics. Theory of sound. Noise measurement techniques with practical examples of application.

Requirements for acceptance:
Successfully passing the two written tests during the weeks 7 and 14. Questions might be similar to those ones used during the lectures, including 5-6 essay type tasks. All instructions shall be available on the task lists of the tests