DIAGNOSTIC ENGINEER

BASIC DATA
Department: Department of Mechanical Engineering, Faculty of Engineering, UD
Program length: 2 semesters, Credits total: 60
Mode of attendance: part-time, 6x2 days per semester (Friday and Saturday)
Detailed description (in Hungarian): program_description
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INTRODUCTION
The basic goal of our training is to provide professional knowledge related to machine fault diagnosis and modern maintenance of machines for engineers. It is important to reveal the machine faults in early stage before ultimate problem developed. Therefore, companies can avoid sudden breakdowns and ensure the continuous production with the machines, spare money and increase the company profit. The engineers completing the training will be able to design, develop, manage and perform diagnostic tests with diagnostic expert systems. They get deep knowledge about vibration diagnostics, thermography, acoustic techniques, non-destructive testing methods and many other fields of diagnostics which are vital for the proper and modern maintenance. The state-of-the-art software integrated into the training provide an opportunity for the graduates to be able to think in an integrated maintenance model and apply it on remote monitoring online platforms, following the spirit of Industry 4.0 and the spirit of artificial intelligence (AI) in diagnostics. Another goal of the training is that the engineers who complete the technical diagnostic training are prepared for life-long learning and the expansion of their knowledge.

The training was developed with recognized industrial specialists with years of experience in the subject, who play a significant role in its practical education. The Department of Mechanical Engineering of the Technical Faculty of the University of Debrecen participates in the training. Our diagnostic laboratory with quality measurement devices provide excellent possibilities not only for the theoretical but the practical education as well.

SUBJECTS

Introduction to technical diagnostics	Machine learning methods in diagnostics
Safety, reliability, risk	Vibration diagnostics II.
Fracture mechanics	Acoustic measurements in diagnostics
Statistical methods	Oil diagnostics methods
Measurement techniques and digital signal processing (DSP)	Acoustic emission (AE) measurements
Tribology	Non-destructive testing methods with image analysis
Material fatigue	Eddy-current and penetration testing
Corrosion	Power-plant diagnostic methods
Vibration diagnostics I.	Vehicle diagnostics
Thermography	Thesis
Endoscopy	

LABORATORIAL BACKGROUND
Engineering Diagnostics Laboratory, Metallographic Laboratory, Material Testing Laboratories, Environmental Simulation Laboratory, CAD and CAE Laboratory