PEKÁR IMRE
DOCTORAL SCHOOL OF MECHANICAL ENGINEERING
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Name of the course:	**Mechanical systems engineering and modelling**
Course type:	Optional
Responsible lecturer:	Dr. Sándor Hajdu
Content:	In the subject, the methods of creating models of mechanical equipment and systems, the characteristics of modelling, the concept and classification of models will be discussed. The subject covers the following areas. Modelling procedures, modelling and simulation. Systems theory concepts, types and classification of systems. Time-domain models of mechanical systems. State-space models, controllability, observability, minimal systems. Stochastic system models. Frequency domain models of mechanical systems. Uncertainty modelling, unstructured and structured uncertainty models, μ-analysis. Simplification of models, model reductions. Measurement-based modelling procedures, model identification. LPV modelling of non-linear mechanical engineering systems.
Literature:	• Velten, K.: Mathematical Modeling and Simulation, WILEY-VCH Verlag GmbH & Co, 2009. • Juang, J.-N., Phan M. Q.: Identification and control of mechanical systems, Cambridge University Press, Cambridge, 2001. • Zhou, K.: Robust and Optimal Control, Prince Hall, New Jersey, 1996. • Sename, O., Gáspár P., Bokor J.: Robust Control and Linear Parameter Varying Approaches - Application to Vehicle Dynamics, Springer-Verlag, Berlin Heidelberg, 2013. • Pokorádi L.: Rendszerek és folyamatok modellezése, Campus Kiadó, Debrecen, 2008.