Course title: **Damage Theory**	**Neptun code:** **GEMTT542-a**
Course coordinator: **Dr. János Lukács, Full Professor, CSc (PhD)**	
type and number of lesson: **lectures, 28 hours/ semester**	
method of accountability: **colloquium**	
curriculum location of the subject: **autumn** / spring	
pre-study conditions: **N/A**	
The task and purpose of the subject:	
systematic presentation of the deterioration and degradation of engineering structures; introduction to loading types, failure modes and their connection systems; description of different failure modes and their consequences	
Course description:	
Deterioration and degradation of engineering structures. Failure modes and statistics: engineering and aircraft structures, technological and transporting pipelines, pressure vessels, steel bridges. Loading types: mechanical, thermal and environmental loads; failure modes: deformation, fracture, corrosion, wear and degradation. Connection system of loading types and failure modes. Characteristics of different failure modes, description possibilities, relevant material properties. Complex description of concurrent failure modes. Failure analysis, case studies.	
Required literature:	
1. W. T. Becker, R. J. Shipley (eds.): ASM Handbook, Volume 11: Failure Analysis and Prevention. ASM International, 2002. ISBN: 978-0-87170-704-8. 2. J. Lemaitre, R. Desmorat: Engineering Damage Mechanics – Ductile, Creep, Fatigue and Brittle Failures. Springer-Verlag, Berlin – Heidelberg, 2005. ISBN: 3-540-21503-4. 3. J. Grosch et al.: Schadenskunde im Maschinenbau – Charakteristische Schadensursachen – Analyse und Aussagen von Schadensfällen. Expert Verlag, Ehlingen bei Böblingen, 2017. ISBN: 978-3-8169-3172-0.	
Recommended literature:	
1. ASM Handbook, Volume 19: Fatigue and Fracture. ASM International, Materials Park, OH, 1996. ISBN: 978-0-87170-385-9. 2. F. C. Campbell (ed.): Fatigue and Fracture – Understanding the Basics. ASM International, Materials Park, OH, 2012. ISBN: 1-61503-976-7. 3. H. Naubereit, J. Weihert: Einführung in die Ermüdungsfestigkeit. Carl Hanser Verlag, München-Wien, 1999. ISBN: 978-3-446-21028-8.	