Course title: Theory of Metal Forming	**Neptun code: GEMTT531-a**
Course coordinator: Dr. Zsolt Lukacs, associate professor, PhD	
type and number of lessons: lecture, 2 hours/ week	
method of accountability: colloquium	
curriculum location of the subject: spring	
pre-study conditions: Materials Science (GEMTT500P-a)	
The task and purpose of the subject:	
Introducing the theoretical mechanical foundations of plastic deformation and introducing various theoretical solution methods for PhD students choosing plastic deformation.	
Course description:	
Basic equations of continuum mechanics, basic relations of deformation and stress state. A material laws of plastic deformation. Flow conditions and flow potential. Solution methods of Plastic deformation. The possibility of an exact, mathematical-mechanical solution. Approximate solution methods. Approximate analytical methods (the deformation work method, average stress method, sliding line method). Extreme value theorems of plasticity, a variational principle of plasticity. Approximate numerical solution methods in plastic deformation (finite difference method, finite element method, boundary element method).	
Required literature:	
1. Kachanov, L. M.: Fundamentals of Theory of Plasticity, Dover Publ., 2013. ISBN 9780486150826ASM Metals Handbook, Volume 6: Welding, Brazing and Soldering, American Society for Metals. Metals Park Ohio, 2010. 2. Marciniak Z. Duncan J. L. Hu S. J.: Mechanics of Sheet Metal Forming, Butterworth&Heinemann Oxford UK, 2002.	
Recommended literature:	
1. Sluzalec, A.: Theory of Metal Forming Plasticity, Springer, Berlin, New York, Heidelberg, 2010. 2. Slater, RAC: Engineering and Plasticity: Theory and Application to Metal Forming Processes, Cambridge University Press, 2003	