

<b>Course title: Tribology</b>	<b>Neptun code: GEGET409-a</b>
<b>Course coordinator:</b> Ferenc János Szabó associate professor, PhD	
type and number of lesson: 28 (14 x 2 <u>lectures/week</u> )	
method of accountability: <u>colloquium</u>	
curriculum location of the subject: <u>autumn</u> /spring	
pre-study conditions: No	
<b>The task and purpose of the subject:</b>	
Detailed study of the hydrodynamic and elasto- hydrodynamic lubrication, steps of tribological verification of industrial gear drives.	
<b>Course description:</b>	
History of Tribology, Reynolds equation. Types of friction, different possible friction states between surface pairs in contact. Newton theorem, laminated flow, definition of viscosity. Difference between absolute and relative viscosity. Different possible ways to form the load bearing fluid film in journal and sliding bearings. Approximation used for the description of tribological state of gear surfaces, TEHD theory of lubrication. Calculation of most important characteristic temperatures in gearboxes. Safety against seizure concerning gear surfaces. The theory derived in the lectures is used during the practical lessons for numerical examples calculation of gears.	
<b>Required literature:</b>	
<ol style="list-style-type: none"> <li>1. Pahud, P., 1996, "Thermo-elasto-hydrodynamic (TEHD) lubrication", Tribology International, Vol. 29. No. 1, pp. 1-9.</li> <li>2. Floberg, L., Jakobsson, B., 1957, "The Finite Journal Bearing, Considering Vaporization", Trans. Chalmers Univ. Tech., Goteborg, pp. 190.</li> <li>3. Szota Gy., 1974, Sikócsapágyak tervezése,(Design of Journal Bearings, in Hungarian) Műszaki könyvkiadó, Budapest</li> <li>4. Menezes, P. L., et al: Tribology for Scientists and Engineers. Springer Verlag, New York, USA, 2013</li> </ol>	
<b>Recommended literature:</b>	
<ol style="list-style-type: none"> <li>1. Reynolds, O., 1886, "On the Theory of Lubrication and Its Applications to Mr. Beauchamp Tower's Experiments Including an Experimental Determination of the Viscosity of Olive Oil", Phi. Trans., Vol. 177(I), pp. 157-234. [6] Barus, C., 1</li> <li>2. Dowson, D. és Higginson, G., R., 1959, "A Numerical Solution to the Elastohydrodynamic Problem", Int. Journal of Mechanical Science, Pergamon Press</li> <li>3. Hertz, H., 1882, „Über die Berührung fester elastischer Körper“, J. reine und angewandte Matematik, Vol 92, pp. 156-171.1 of Mechanical Science, Vol. 1 No. 1, pp. 6-15</li> </ol>	