

<b>Course title:</b> <b>Engineering Design of Machine Structures</b>	<b>Neptun code: GEGET402-a</b>
<b>Course coordinator: Ferenc Sarka, associate professor, PhD</b>	
type and number of lesson: Weekly lecture + seminar hours: 28 (14 x 2/week)	
method of accountability: colloquium	
curriculum location of the subject: <b>spring</b>	
pre-study conditions:	
<b>The task and purpose of the subject:</b>	
The course provided basic information on how to handle elements subjected to fluctuating load and presents the physical basis of fatigue, load analysis.	
<b>Course description:</b>	
Definition of damage and failure. Classification of failure modes. Definition of typical failure modes. Classification and characteristics of stresses. Types and characteristics of sinusoidal stresses. The components of stresses. Woehler's experiments. The S-N diagram. Endurance limit. Finite-life region. Infinite-life region. The Smith diagram. The Haigh diagram. Low-cycle fatigue. High-cycle fatigue. Endurance limit modifying factors. Combined fatigue stress concentration factor. Factor of safety. Uniaxial stresses. Stresses due to combined load. Equations of the S-N curves. Cumulative fatigue damage. Fatigue strength of shafts. Rotating shafts loaded by bending and torsional moments. The Soderberg approach. Load capacity of spur gears. Surface durability. Strength.	
<b>Required literature:</b>	
<ol style="list-style-type: none"> <li>1. Robert C. Juvinal: Fundamentals of Machine Component Design, John Wiley &amp; Sons Inc. 2000, ISBN0-471-24448-1.</li> <li>2. Joseph E. Shigley: Mechanical Engineering Design, McGraw Hill, 2004, ISBN007-123270-2</li> </ol>	
<b>Recommended literature:</b>	
<ol style="list-style-type: none"> <li>1. Bernard J. Hamrock: Fundamentals of Machine elements, McGraw-Hill, 1999, ISBN 0-256-19069-0</li> </ol>	