

Biomechanics			
Credits: 5 Semester 3 (WUT) Compulsory: Yes			
Format	Lectures 25 h	Tutorials: 15 h	Private study 85 h
Lecturers: K. Kedzior, C. Rzymkowski (WUT)			
<p>Objectives: This course presents the fundamental knowledge on the mechanics of the human body considering the skeleton and muscular system. The students will learn how to analyse static and dynamic forces and torques acting on the body parts during motion and in working conditions.</p>			
<p>Contents: The following subjects will be discussed:</p> <ul style="list-style-type: none"> Anthropometry, Fundamentals of occupational biomechanics, Human motion properties, Biomechanical analysis of human motion system, Kinematics of the human body, Structure, action, energy sources, power and efficiency of skeletal muscles, Skeletal muscles control, Cooperation between muscles, Biomechanics of impacts, Biomechanics of bone tissue, Introduction to dynamical analysis of the human body 			
<p>Abilities: After completing this course, the students will be able to:</p> <ul style="list-style-type: none"> Evaluate the load effort to the human body parts and relate them to the requirements met during the design of exoskeletons or humanoids. Evaluate the key biomechanical parameters of human motion and propose the method of its measurement. Elaborate the preferred human postures when manipulating loads using the strength analysis. 			
Assessment: 30% class work, 70% end-semester exam			
<p>Recommended texts:</p> <ul style="list-style-type: none"> D.A. Winter, <i>Biomechanics of Human Movement</i>, John Wiley&Sons 1st edition – 1979 and later editions K. Kedzior: Occupational Biomechanics. In: Karwowski W. (ed.), <i>International Encyclopedia of Ergonomics and Human Factors</i>, Vol. III, Taylor and Francis, London – New York 2001, 1545-1558 			
<p>Further readings: will be provided by lecturers</p>			