

Course name	Mechanization in Forestry	
Course code		
Department	Department of Forest Work Mechanization	
Faculty	Faculty of Forestry	
Course coordinator/ Lecturer	Mariusz Kormanek, PhD Associated Professor of Department of Forest Work Mechanization rlkorma@cyf-kr.edu.pl Phone: +48 12 662 50 24; Agricultural University site ; Researchgate	
General information	Teaching period	summer semester
	ECTS credit	2
	Lectures in total	15
	Classes	10
Language	English	
Objective and general description	The main objective of the course is to acquaint participants with the construction, classification and the principles of correct selection of the machines for forest works. Students become familiar with the impact of the machines on the forest environment, and learn about the possibility of their ecological exploitation.	
Lectures 7.5 x 2 (14 h)	<ol style="list-style-type: none"> 1. Mechanization of forestry in Poland - historical background. Machinery used in the nursery. 2. Machines for establishing and maintaining of forestation and reforestation. Transplanting of large trees. 3. Machines for harvesting, postharvest handling and storing of seeds, mechanization of container nurseries. 4. Multi-operational machines for harvesting. 5. Forest biomass, chipping, briquetting and pelletizing machines. 6. Chainsaws, brush cutters, trimmers. 7. Impact of the machines on the forest environment. 	
Classes 5 x 2 (10 h)	<ol style="list-style-type: none"> 1. Fundamentals of mechanical engineering - part I: machine components – identification of elements, classification, application, internal combustion engines - operating principle, classification, diagnostics. 2. Fundamentals of mechanical engineering - part II: hydraulic and electric drives and control - identification of elements, classification, application. 3. Operating of universal and specialized tractors, multi-operational forest machines simulators. 4. Construction and adjustment of the nursery equipment. 5. Construction and adjustment of the equipment for chemical plants protection, irrigation systems. 	
References	<p>M. Botwin: Podstawy użytkowania maszyn leśnych. Wydawnictwo SGGW, Warszawa 1993.</p> <p>Praca zbiorowa pod redakcją J. Więsika: Pilarki przenośne, budowa i eksploatacja. Fundacja Rozwój SGGW. Warszawa 2002.</p> <p>J. Więsik: Maszyny leśne Część I. Wydawnictwo SGGW-AR, Warszawa 1990.</p> <p>J. Więsik: Maszyny leśne Część II. Wydawnictwo SGGW-AR, Warszawa 1991.</p> <p>J. Więsik, M. Aniszewska, Urządzenia techniczne w produkcji leśnej - Tom 1 - Urządzenia do hodowli i ochrony lasu Warszawa 2011.</p>	

<p>Learning outcomes</p>	<p>Knowledge: A student knows the basics of materials science and workshop metrology, machine parts, mechanical, electrical, hydraulic and pneumatic drives and control, thermal engines. A student is able to classify and characterize the machinery and equipment used in forestry, knows the structure of individual machines and their major operating components, principles of operation and adjustment of the machines, and the conditions of their proper exploitation. A student distinguishes unconventional energy sources and identifies their ecological and economic importance. He/ she is aware of the threats to the forest environment, arising from the usage of certain technology. Skills: A student is able to plan and carry out experiments and solve simple engineering tasks concerning the basic operating parameters of machines and their operating components, such as: force, torque, gear, work, power, agility, efficiency. Social competence: A student properly assesses the risks and makes responsible decisions related to the utilization of high-tech and innovative techniques in forest management.</p>
<p>Assessment criteria</p>	<p>Lecture: written exam, time limited Classes (workshop), laboratory, field practice: test of knowledge; credit report / reports on the laboratory work / practical exercises (individual and group); test of abilities: completing a computational and analytical task, performing activities, developing a decision; assessment of the involvement in the discussion, skills of summarizing, evaluating final course grade</p>