

Course title: Renewable energy					
	Specialty	Semester	Number of ECTS	Number of hours in the class	Form
	Foreign students	winter	4	60	Lab – 30 h Lecture – 30 h
Name of lecturer: prof. dr hab. Ewa Siedlecka; dr inż. Aleksandra Pieczyńska					
Objective of the course (expected learning outcomes and competences to be acquired)					
<ul style="list-style-type: none"> familiarizing students with all issues listed in the seminar program content, 					
Prerequisites:					
none					
Teaching methods:					
<ul style="list-style-type: none"> thematic presentations laboratory experiments 					
Course contents					
<p>A. Problems of the lecture: Characteristics of renewable energy sources. Determinants of energy policy in the 21st century - forecasts for the future. Discussion of ways to obtain solar, wind, geothermal and tidal energy. Heat pumps. Photovoltaic cells. Solar panels. Windmills. Biomass energy resources. Energy crops - raw material for the production of energy, liquid and gaseous biofuels. Characteristics and technologies of gas biofuel production. and liquid. Utilization and management of waste generated during the production of biofuels. Hydrogen as a fuel of the future.</p> <p>B. Problems of laboratory exercises, basics of laboratory work, performance of thematic exercises related to obtaining energy from renewable sources (technological and quality aspects).</p>					
Recommended reading:					
https://chemia.ug.edu.pl/sites/default/files/_nodes/strona-chemia/14335/files/eo_harmonogram.pdf					
Assessment methods:					
<ul style="list-style-type: none"> Oral presentation Lab report 					
Language of instruction: English					
Contact:					
ewa.siedlecka@ug.edu.pl					