University of Gdańsk

Subject card

Subject name and code	Renewable Energy, PG_00081858		
Field of study	Chemistry		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Advanced Oxidation Processes -> Department of General and Inorganic Chemistry -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Ewa Siedlecka	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	30.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	5.0	15.0	50

Subject objectives

to familiarize students with the energy situation in the country and the world
to familiarize students with renewable energy sources and methods of obtaining it
to familiarize students with types of biofuels, their production and use
to familiarize students with pro-ecological vehicles and technical conditions for their use

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	understandably presents correct technological reasoning both orally and in writing,	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
[CHEML3_K01] Identifies the level of her/his own knowledge and skills and the need for continuous learning and personal development.	understands the need to save energy and obtain it from renewable sources, understands the need for further education,	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report
[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	uses basic technological and chemical concepts describing the process of obtaining renewable energy, discusses the advantages and disadvantages of producing and using energy from renewable sources	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[CHEML3_W02] Describes the properties of elements and the most important chemical compounds, enumerates the methods of their preparation and methods of analysis.	classifies raw materials and appropriate technologies for the production of liquid and gaseous biofuels and methods of their storage,	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report

<table>
<tr><td>Subject contents</td><td>Characteristics of renewable energy sources. Conditions of energy policy in the 21st century - forecasts for the future. Discussion of methods of obtaining solar, wind, geothermal and tidal energy. Heat pumps. Photovoltaic cells. Solar collectors. Windmills. Biomass energy resources. Energy plants - raw material for energy production, liquid and gaseous biofuels. Characteristics and technologies of gaseous and liquid biofuel production. Utilization and management of waste generated during biofuel production. Hydrogen as the fuel of the future. Algae as a source of biofuels. Fuel and microbiological cells. Pro-ecological vehicles: electric vehicles, using solar energy, hybrid combustion-electric vehicles. Energy storage. Technical preparation for the use of pro-ecological vehicles.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>non</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>activity during classes</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>carrying out the work assigned by the teacher</td><td>51.0%</td><td>70.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>given by the teacher during the class</td></tr>
<tr><td>Supplementary literature</td><td>independently searched by the student</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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