GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Life Cycle Analysis of Building Materials , PG_00048496		
Field of study	Chemistry in Construction Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	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	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Energy Conversion and Storage -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Ewa Klugmann-Radziemska	
	Teachers	dr inż. Bartosz Szulczyński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13992

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	2.0	43.0	75

Subject objectives

The aim of the course is to learn the theory of life cycle assessment (LCA) and the principles of implementation of the life cycle assessment and pro-ecological design of construction products, using specialized software.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U06	Student is able to use specialized software to solve engineering tasks.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
K6_W10	Student has the knowledge to carry out the analysis of the life cycle of construction products, taking into account the principles of sustainable development and legal conditions. Can identify aspects where improvement can be made taking into account the above assumptions.	[SW2] Assessment of knowledge contained in presentation
K6_U04	Student has detailed knowledge and is able to make a critical analysis in the field of technology for the production of materials and products, as well as their modification and recycling.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
K6_K04	Student is able to participate in the preparation of team projects, taking into account economic, ecological and legal aspects.	[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills

Subject contents

LECTURE Definition and structure of the Ecological Life Cycle Assessment (LCA) technique Purpose and scope of the Ecological Life Cycle Assessment International environmental protection standards Life Cycle Assessment - ISO 14040 group standards LCA principles and structure. Analysis of a set of inputs and outputs. Life Cycle Impact Assessment. Life Cycle Interpretation Environmental Impact Assessment Systems Interpretation of LCA results Life cycle costs - LCC LCC life cycle cost models LCA and LCC applicationsLABORATORY EXERCISES Self-conducted analysis for a selected case

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Exam</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Project</td><td>60.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. Ekologiczna ocena cyklu życia (LCA) nowa techniką zarządzania środowiskowego - praca zbiorowa pod red. Joanny Kulczyckiej. Wydawnictwo Instytutu Gospodarki Surowcami Mineralnymi i Energią PAN, Kraków 2001
2. Jan Górzyński Podstawy analizy środowiskowej wyrobów i obiektów, WNT 2007
3. Adamczyk W.: Ekologia wyrobów. PWE, Warszawa 2004
4. Z. Kowalski, J. Kulczycka, M. Góralczyk - Ekologiczna ocena cyklu życia procesów wytwórczych (LCA), PWN 2007</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">1. Władysław Strykowski [et al.], Środowiskowa ocena cyklu życia (LCA) wyrobów drzewnych, Poznań, Wydawnictwo Instytutu Technologii Drewna, 2006</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. List and characterize the main categories of environmental impact.
2. Life cycle assessment structure.
3. What is normalization in LCA analysis.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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