



## 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: <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13992">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13992</a>						
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						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	50.0%
	Project	60.0%	50.0%
Recommended reading	Basic literature	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	
	Supplementary literature	1. Władysław Strykowski [et al.], Środowiskowa ocena cyklu życia (LCA) wyrobów drzewnych, Poznań, Wydawnictwo Instytutu Technologii Drewna, 2006	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. List and characterize the main categories of environmental impact. 2. Life cycle assessment structure. 3. What is normalization in LCA analysis.		
Work placement	Not applicable		