COURSE DESCRIPTION CARD - SYLLABUS

Course name

Environmental evaluation tools

Course

Field of study

Transport

Year/Semester

1/1

Area of study (specialization)

Sustainable transport

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

English

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Jedrzej Kasprzak, Ph.D. (Eng).

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Responsible for the course/lecturer:

Prerequisites

Knowledge: Student has a basic knowledge about the questions of environmental impacts of technical objects and technologies, and environmental protection

Skills: Student is able to use MS Word, Excel and PowerPoint software (or other similar). He can collect and transform information acquired from Internet or other digital or traditional sources

Social competencies: Student is aware of the importance of human activities in relationship with the environment, he understands their general aspects and consequences. He can work in the workgroup, and clearly distribute the tasks. He can do the verbal presentation of the results obtained.

Course objective

Commitment and broadening the knowledge about the environmental impacts of technical objects and processes, including transport processes. History, applications and methodological assumptions of the ecobalancing methods, especially the life cycle assessment (LCA) method. Commitment of the practical skills in the field of ecobalancing analyses preparation and use of the specific environmental software

Course-related learning outcomes

Knowledge

Student has advanced and detailed knowledge of the processes taking place in the life cycle of transport systems

Student has knowledge of the advanced methods, techniques and tools used in solving complex engineering tasks and conducting research in a selected area of transport

Skills

Student is able to obtain information from literature, databases and other sources (in Polish and English), integrate it, interpret and critically evaluate it, draw conclusions and formulate and exhaustively justify opinions

Student is able to plan and conduct experiments, including measurements and simulations, interpret the obtained results and draw conclusions, as well as formulate and verify hypotheses related to complex engineering problems and simple research problems

Student is able - when formulating and solving engineering tasks - to integrate knowledge from various areas of transport (and, if necessary, also knowledge from other scientific disciplines) and apply a systemic approach, also taking into account non-technical aspects

Social competences

Student understands that in the field of transport engineering, knowledge and skills very quickly become obsolete

Student understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Evaluation based on the control work (written test) and presentation of the results of the individual or group work

Programme content

Terminology concerning ecobalancing and environmental issues. General questions related with the term of environment (structure, resources, threats). The life cycle of technical objects and processes, including the main stages. History of ecobalances. Methodology of the ecobalances. Application and tools of ecobalances, inlcuding methods and informatic tools. The examples of the ecobalancing analyses with the particular consideration of the specificity of the operations, potential problems,

interpretation. Simplified ecobalances. LCA as the component of LCM. Self-preparation of the environmental analysis of the chosen technical object.

Teaching methods

Lecture: multimedia presentation, illustrated with examples on the board

Tutorials: individual exercises supported by the dedicated software, done under the supervision of the lecturer

Bibliography

Basic

Lectures - multimedia presentations

ISO 14040:2009 Environmental management - Life cycle assessment - Principles and framework

ISO 14044:2009 Environmental management - Life cycle assessment - Requirements and guidelines

Kurczewski P. (2014), Life cycle thinking in small and medium enterprises: the results of research on the implementation of life cycle tools in Polish SMEs—part 1: background and framework. The International Journal of Life Cycle Assessment volume 19, pages 593–600

Witczak J., Kasprzak J., Klos Z., Kurczewski P., Lewandowska A., Lewicki R. (2014), Life cycle thinking in small and medium enterprises: the results of research on the implementation of life cycle tools in Polish SMEs—part 2: LCA related aspects. The International Journal of Life Cycle Assessment volume 19, pages 891–900

Goedkoop, M.; Spriensma, R.S., The Eco-indicator 99, a Damage oriented method for LCIA, Ministry VROM, the Hague 1999

Additional

Baumann H., Tillman A.: The Hitch Hiker’s Guide to LCA. An orientation in life cycle assessment methodology and application Sweden, 2004, ISBN ISBN 91-44-02364-2

The International Journal of Life Cycle Assessment - review of the annuals.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tests, preparing for tutorials) [1]	20	1,0

[1] delete or add other activities as appropriate