



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Environmental, social & economic impact of mobility solutions [S2TIIZM1E>ŚSiEWwZM]

Course

Field of study

Information Technology for Smart and Sustainable Mobility

Year/Semester

2/4

Area of study (specialization)

–

Profile of study

general academic

Level of study

second-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

32

Projects/seminars

0

Number of credit points

4,00

Coordinators

prof. dr hab. Agnieszka Merkisz-Guranowska
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Lecturers

Prerequisites

Knowledge: Knowledge of sustainability concepts. Knowledge of transport systems Skills: Critical thinking and communication skills

Course objective

The aim of the course is to understand the environmental and social consequences of various mobility solutions and evaluate strategies to reduce negative environmental and social impacts. Student should be able to assess the economic costs and benefits of mobility systems (including externalities) and explore how mobility contributes to or hinders economic development at local, national, and global levels.

Course-related learning outcomes

Knowledge

The student has well-structured and theoretically grounded general knowledge related to key issues in the field of transport engineering, in particular understands the fundamentals of project management in the area of sustainable and smart mobility solutions, knows life cycle assessment tools and methods for evaluating project profitability

The student has knowledge of ethical codes related to scientific research conducted in the field of transport systems

The student is familiar with the economic, legal, and other conditions related to mobility

Skills

The student is able to obtain information from literature, databases, and other sources, integrate it, interpret and critically evaluate it, draw conclusions, and formulate well-justified opinions

The student is able — when implementing and evaluating mobility projects — to integrate knowledge from various fields, including environmental, economic, and social assessment, and to apply a systems approach that also takes non-technical aspects into account

The student is able to prepare and present a scientific study presenting research results or an oral presentation on specific issues in the field of transport engineering and its supporting tools

The student is able to collaborate within a team, taking on various roles, including leading a team

Social competences

The student understands the importance of using the latest knowledge in transport engineering to solve research and practical problems

The student understands the importance of dissemination activities related to the latest achievements in transport engineering and transport systems, and is ready to initiate actions for the benefit of the community and public interest

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures - Class participation / discussions and written test

Tutorials - A case study analysis of a city's mobility plan or system. Group project - applying knowledge to a practical planning or policy scenario.

Programme content

Project evaluation. Feasibility studies of novel mobility solutions. Assessment of environmental, social and economic impact of projects for sustainable & smart mobility solutions.

Course topics

- Basics of project management for sustainable & smart mobility solutions
- Project evaluation – methods, participatory approach
- Feasibility studies of novel mobility solutions (essence, purpose structure, requirements) including 15 minutes city and local sustainable innovations zones
- Life Cycle Sustainability Assessment – purpose and stages
- Assessment of economic viability of projects for sustainable & smart mobility solutions – criteria, methods and case studies
- Assessment of environmental impact of projects for sustainable & smart mobility solutions (GHG emissions, air quality, carbon foot print calculation's methods, smog, noise, etc.)
- Assessment of social impact for sustainable & smart mobility solutions (criteria, social inclusion, equity analysis, user group expectations, problem of adaptability to new software, impact of quality of mode of transport on user's behaviors)
- Awareness of carbon issues of people's mobility (Mobility Fresk workshop)

Teaching methods

Half of the course is conducted remotely (online) in a synchronous format. The rest of classes are held in person. The entire course may be conducted in an in-person format.

Interactive lectures with multimedia presentations.

Case studies and practical examples. Individual work and group work.

Bibliography

Basic Victoria Transport Policy Institute, www.vtpi.org

IMM Design Lab, <https://www.immdesignlab.com/>

European Commission (2021). Sustainable and Smart Mobility Strategy – putting European transport on

track for the future.

Additional

Litman, T. (2021). Evaluating Transportation Equity: Guidance for Incorporating Distributional Impacts in Transportation Planning. Victoria Transport Policy Institute

Tolley R., Turton B. J. (2013) Transport systems, policy and planning. Ebook.

Breakdown of average student's workload

	Hours	ECTS
Total workload	102	4,00
Classes requiring direct contact with the teacher	62	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	40	1,50