COURSE DESCRIPTION CARD - SYLLABUS

Course name
Human-Computer Interaction for sustainable and mobile application [S2TIIZM1E>ICK]

Course

Field of study
Information Technology for Smart and Sustainable Mobility

Year/Semester
1/1

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
16

Laboratory classes
0

Other
0

Tutorials
32

Projects/seminars
0

Number of credit points

4,00

Coordinators

Lecturers

Prerequisites

Knowledge: Basic programming skills (e.g., Python, JavaScript, or other relevant languages) Understanding of user interface (UI) and user experience (UX) principles Basic knowledge of sustainability concepts is recommended but not required

Course objective

This course introduces students to the principles and practices of Human-Computer Interaction (HCI), with a focus on the design of sustainable and mobile applications. Student should be able to design explicit and implicit HCI for the implementation of software application for sustainable mobility

Course-related learning outcomes

Knowledge:
The student has advanced and detailed knowledge of selected issues related to the application of IT tools in transport systems in the context of human-computer interaction (HCI), including knowledge of basic HCI concepts, issues of accessibility, usability, and inclusiveness in HCI, and key measures of interface effectiveness and quality in human-computer interaction.
The student has knowledge of ethical codes related to scientific research work involving IT systems used in transport systems.

The student is familiar with the risks associated with the improper use of interfaces and tools in the field of HCI.

Skills:
The student is able to use information and communication technologies in the design, implementation, and evaluation of human-computer interaction in sustainable transport systems.
The student is able - when formulating and solving engineering tasks - to integrate knowledge from various areas of transport and computer science (and, if necessary, also from other scientific disciplines), and to apply a systems approach that also takes into account non-technical aspects, especially ethical and inclusiveness-related issues.
The student is able to prepare and present a scientific study presenting research results or an oral presentation on the principles of human-computer interaction, with particular emphasis on the design of sustainable and mobile applications.
The student is able to work effectively in a team, taking on various roles, and to argue and justify opinions related to human-computer interaction.

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

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures: Multiple choice test
Practical work, group project by course
Learning & Assessment Situation project - group project for evaluation of several competences

Programme content

Basic Concepts in HCI, Quality Evaluation in HCI, Implicitly HCI, Sustainable Human Computer Interaction

Course topics

HCI: accessibility, usability and inclusion
Basic Concepts in HCI - Introduction to foundational concepts in Human-Computer Interaction, including classical HCI models, user-centered design principles, and methods for interface design and system modeling.
Quality Evaluation in HCI - Overview of evaluation standards, methods (heuristic evaluation, usability testing), and key performance measures used to assess the quality and effectiveness of human-computer interfaces.
Implicit HCI: Design, Deployment & Evaluation - Exploration of HCI approaches that support natural and seamless user interaction. Focus on ambient systems, context-aware computing, and evaluating interfaces integrated into everyday environments.
Sustainable Human-Computer Interaction - Discussion on how HCI can support sustainability goals through behavior change, energy-efficient design, and long-term usability. Examination of sustainable design practices and their impact on user behavior and the environment.
Accessibility, Usability, and Inclusion in HCI - Analysis of inclusive design principles ensuring accessibility for users with diverse abilities. Emphasis on creating usable, equitable systems through adherence to accessibility guidelines and universal design practices.

Teaching methods

The course is conducted remotely (online) in a synchronous format. Classes may also be held in person.
Interactive lectures with multimedia presentations
Case studies and group work

Bibliography

Basic:
Shneiderman, B., Paisant, C., Cohen, M. and Jacobs, S. (2010) Designing the User Interface: Strategies for

Effective Human-Computer Interaction, USA. Addison-Wesley Publishing Company.

Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	48	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	52	2,00