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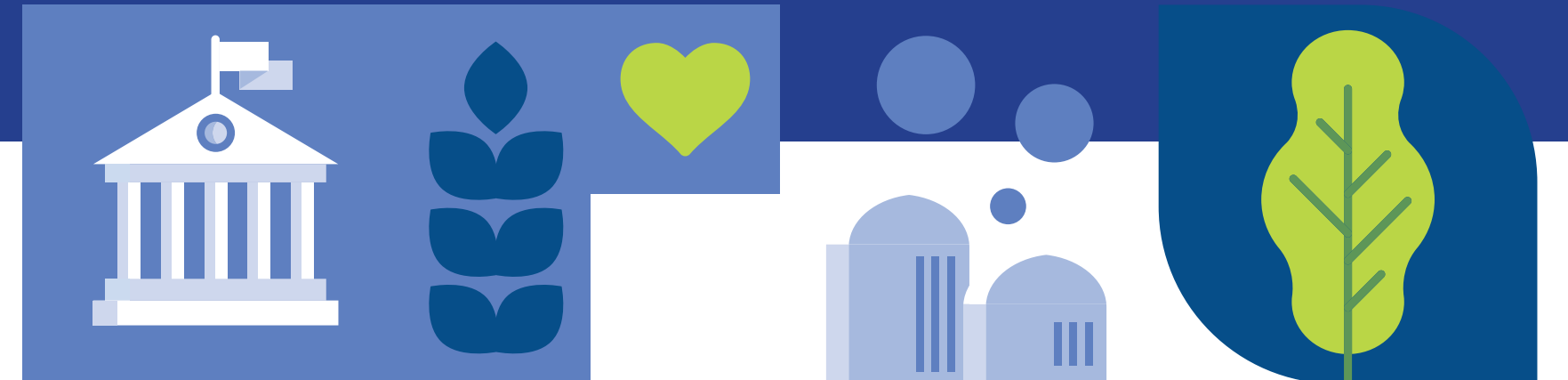
GENERAL INFORMATION

Project Name: Circular Economy and Reverse Engineering Education for the Green Transition
Project acronym: CircleREdu
Type of the project: KA220-HED - Cooperation partnerships in higher education
Project number: 2024-1-PL01-KA220-HED-000254978
Number of partners: 4 project partners
Budget: 400 000 EUR
Project duration: 01/12/2024 – 30/11/2027

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Circular Economy and Reverse Engineering Education for the Green Transition



BACKGROUND

The transition towards a circular economy requires a new generation of professionals equipped with digital, sustainability, and innovation-oriented competencies. Higher education institutions face the challenge of preparing students to address complex industrial problems while supporting green transformation agendas. The Erasmus+ project CIRCLEREDU (Circular Economy and Reverse Engineering Education for the Green Transition) responds to this need by developing an innovative educational framework that integrates reverse engineering, digital technologies, and circular economy principles into management and engineering education.

RESULTS AND GOOD PRACTICE

The project has resulted in a comprehensive educational ecosystem supporting circular economy and reverse engineering education. Key outputs include:

- a multidisciplinary curriculum integrating sustainability, digitalisation, and reverse engineering concepts,
- a digital toolbox supporting practical reverse engineering applications,
- an e-learning platform with interactive learning resources,
- training materials and a learner handbook,
- a coaching methodology based on real business and sustainability challenges,
- pilot-tested educational solutions implemented in higher education settings.

Initial pilot implementation demonstrated strong student engagement, increased awareness of circular economy principles, and enhanced understanding of the practical application of reverse engineering.

The course will developed through 4 modules:

- Module 1 Green Skills for CE
- Module 2 Digital/technical skills for RE
- Module 3 Innovative Change Management in Manufacturing for green transition and RE
- Module 4 Solving real industrial challenges

PURPOSE

This poster presents the CIRCLEREDU educational model and its implementation in higher education. It showcases how circular economy, reverse engineering, and digital technologies can be effectively integrated into management and engineering curricula through challenge-based learning. Attention is given to the design, pilot implementation, and transferability of the developed educational solutions. Training materials were developed in cooperation with companies that provided specific problems for teams to solve during the course.

The General Objective of the project is to contribute to environmental, social, and economic sustainability through the creation of a multidisciplinary course that will focus on the potential applications of Reverse Engineering techniques for Circular Economy solutions.

KEYWORDS:

Circular Economy, Reverse Engineering, Management Education, Green Skills, Digital Skills, Challenge-Based Learning, Sustainability, Higher Education.

PROJECT PARTNERS

- Bialystok University of Technology BUT - **Poland**
- Haaga-Helia University of Applied Sciences - **Finland**
- Karlsruhe Institute of Technology KIT- **Germany**
- Babes Bolyai University - **Romania**

METHODOLOGY

The CIRCLEREDU project has been implemented by a consortium of higher education institutions and industry partners from Poland, Finland, Romania, and Germany. Using a participatory and co-creation approach, the partners developed and validated educational solutions integrating circular economy principles, reverse engineering methods, and digital technologies. The implementation process included curriculum design, development of digital learning resources, creation of an online toolbox and e-learning environment, and pilot delivery of courses involving students and external stakeholders. The educational model was tested through challenge-based learning activities addressing real industrial sustainability problems.

SUB-TRACT:

Management education

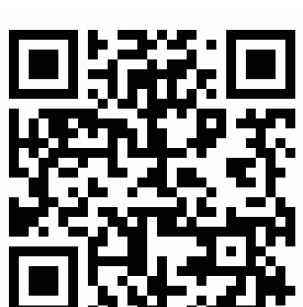


PROJECT MOODLE PLATFORM

moodle.circleredu.pb.edu.pl

PROJECT WEBSITE:

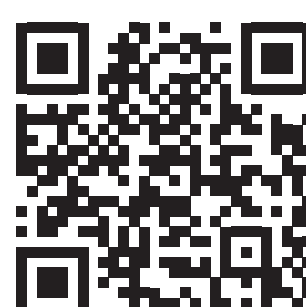
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