Organising universities

Organising committee

- Antonio Albuquerque (UBI, GeoBioTec@UBI, Portugal, Chair)
- Alexandru Enesca (UNITBV, Romania)
- Laurent Duclaux (USMB, France)
- Sabrina Sorlini (UNIBS, Italy)
- Stefana Maria Dima (UVT, Romania)
- Rosa Mosteo Abad (UNIZAR, Spain)

Sustainable development

The BIP contributes mainly to SDG 6, SDG 11, SDG 12 and SDG 13 by promoting decentralised, resource-efficient and resilient water and wastewater reuse solutions for small communities.

Course information

Title: Water and Wastewater Reuse Solutions for Small Communities (ReUseWater)

Format: Hybrid course

Workload: 56 contact hours + 28 independent study and group work

Online delivery: Live streaming

UNITA alliance

Why join?

- Learn from an international network UNITA universities.
- Explore decentralised and nature-based solutions with real-world relevance.
- Work in mixed international teams on case-study-based challenges.
- Develop practical, sustainability-oriented skills in water reuse.

Requirements

- Advanced undergraduate students, master's and doctoral students in environmental engineering, civil engineering, water engineering, sanitary engineering, environmental sciences, environmental chemistry, economy and related areas.
- Intermediate level of English (B1/B2 CEFR).

International training on decentralised, nature-based and resilient water solutions

6-10 July 2026 (in-person) + 13-14 July 2026 (online)

FORMAT	CREDITS	PLACES
Hybrid	3 ECTS	30

Organised within the UNITA alliance by:

ReUseWater BIP 2026

General presentation

The CE&E UNITA Blended Intensive Programme (BIP) "Water and Wastewater Reuse Solutions for Small Communities (ReUseWater)" addresses one of the main environmental and societal challenges of the coming decades: how to provide safe, affordable and sustainable water and sanitation services in small, rural, peri-urban and isolated communities. The programme focuses on decentralised and nature-based solutions for drinking water treatment, wastewater treatment, stormwater management and water reuse, with particular attention to resilience, circular economy and climate adaptation. Through lectures, case studies, technical sessions and collaborative group work, participants will explore how to select, design and evaluate context-appropriate solutions for small communities. The BIP combines an international and interdisciplinary perspective with practical problem solving, enabling students to engage with real-world challenges and exchange experiences across different countries and institutional contexts.

Objectives

This BIP aims to provide participants with theoretical and practical knowledge on decentralised solutions for drinking water supply, wastewater treatment and water reuse in small communities. It also aims to develop participants' ability to analyse local challenges, compare technical alternatives, and propose sustainable, resilient and context-appropriate solutions, with particular emphasis on nature-based and low-energy systems.

Thematic contents

1. Water challenges in small communities

Water scarcity, dispersed settlements, governance, affordability, resilience and public health.

2. Drinking water solutions for small communities

Source protection, small-scale treatment technologies, storage and distribution, operation and monitoring.

3. Decentralised wastewater treatment

Treatment options; compact systems; modular systems; low-cost and low-energy solutions.

Teaching and assessment

The BIP combines expert lectures, real case studies, technical visits and laboratory demonstrations, collaborative teamwork in international groups, and a final challenge in which participants develop and present a reuse solution for a small community.

Assessment will be based on participation in group work, contribution to the case study, and the final presentation or poster.

4. Nature-based solutions and reuse

Constructed wetlands, soil-based systems, evapotranspiration basins, ponds, green filters, reuse for irrigation and non-potable uses, health and environmental safety.

5. Sludge and residuals management

Small-scale sludge handling, valorisation opportunities, circular-economy approaches.

6. Case studies and integrated design

Real examples from partner institutions; technical comparison of alternatives; team-based problem solving for a small community scenario.

Learning outcomes

- Explain the main challenges and opportunities related to drinking water supply, wastewater treatment and water reuse in small and decentralised communities.
- Compare conventional and decentralised treatment solutions, including nature-based systems, according to technical, environmental, economic and operational criteria.
- Assess the suitability of different treatment and reuse options for specific small-community contexts.
- Apply basic design and operational principles for drinking water, wastewater and reuse systems.
- Propose sustainable and resilient water-management solutions for real or simulated case studies.
- Work in an international and interdisciplinary team to analyse problems and communicate technical solutions clearly.

Expected outcomes

- International teamwork experience in a multidisciplinary and intercultural environment.
- Development of a case-study-based proposal for a small-community water or wastewater reuse solution.
- Oral presentation or poster of the proposed solution.
- Strengthened competences in decentralised water management, nature-based solutions and sustainability-oriented design.
- Certificate and 3 ECTS upon successful completion.