

Presentation of the course

This course seeks to offer a wide range of information on already consolidated decentralized technologies in water and waste management in rural and isolated areas. Decentralization appears as a logical solution to address the sustainability issues of water and waste management systems, as it focuses on on-site treatment and local recycling and reuse of resources.

The course will offer participants:

- Ability to develop transversal skills that influence the decision and selection of the most appropriate technology for rural and isolated context.
- Tools to increase the resilience of communities and improve the sustainability of water and waste management systems in rural and isolated areas.
- Theoretical-practical knowledge for the decentralized management of water and waste in rural areas.
- Group work on choice and development of appropriate technologies in selected contexts.

The course is relevant to:

- Practitioners in international development cooperation;
- Undergraduates, MSc and PhD students;
- Researchers, professors and other interested persons.

Participation is free of charge but **registration** is required within the **31st of May 2024**.

This summer school is organized as an Erasmus BIP - Blended Intensive Programme. Students should apply for BIP funds at their home university if available.

If the registration through BIP program is not possible, students can still register without funding options.

In both cases, students are invited to fill out the registration form at this [link](#).

This course integrates a short duration physical mobility component (5 days without counting travel days, from 24th to 28th June) with an online component (2 days, 1st and 2nd July), with a minimum of 3 ECTS. Students enrolled at University of Brescia in Civil Engineering, Land and Environmental Engineering or Architectural Engineering degree courses can get n. 3 ETCS, if Summer School has been chosen in the study plan.

A certificate of attendance will be issued for students attending at least 75% of the course.

One meal per day will be provided to all the participants.

Scientific Committee

Sabrina Sorlini, Mentore Vaccari
Antonio Albuquerque, Rosa
Mosteo, Christoph Lüthi

Organizing secretariat

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CeTamb (<https://cetamb.unibs.it/>)

CeTamb is a research center of University of Brescia supported by Fondazione Cogeme, Museke, Sipec and Tovini. CeTamb aims to build knowledge and develop research on appropriate technical solutions for the management of environmental issues in Low and Middle Income Countries. CeTamb collaborates with NGOs, universities and secondary schools to carry out research and education activities. So far, several projects have been implemented and developed on water, sanitation and energy in different countries.

GETTING THERE

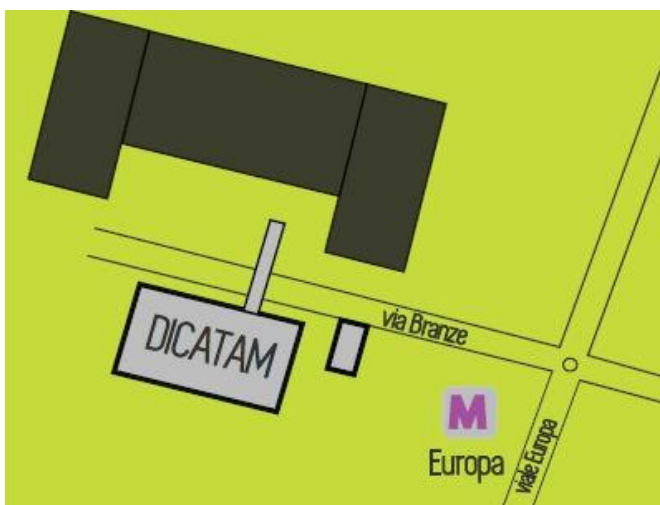
by car

Highway A4 Milano-Venezia

- from Milano, exit A4 at "Brescia Ovest" and follow indications to "stadio" (stadium) or "ospedale" (hospital) (North direction). Pass the hospital and turn right from via Triumplina to via Branze
- from Verona or Piacenza, exit A4 at "Brescia Centro" and follow indications to "stadio" or "ospedale".

by train

At Brescia station take the metro towards "Prealpino", stop at "Europa" then see the map below.



UNIVERSITY
OF BRESCIA

CeTamb

Research center 'Appropriate technologies for environmental management in resource limited Countries'

Co-organized by



UNIVERSIDADE
BEIRA INTERIOR



Universidad
Zaragoza

eawag
aquatic research

Sandec
Sanitation, Water and
Solid Waste for Development

XIII International Summer School Blended Intensive Programme (BIP)

**Decentralized water and waste
management systems:
appropriate technologies and
solutions for resilience and
sustainability**

**Rural and isolated communities
in developing countries**

Coordinator

Sabrina Sorlini

24th June - 2nd July 2024

University of Brescia - DICATAM

Via Branze 43, Brescia (Italy)

Room B.05

Participation:

in person (24-28 June)

remote mode (1-2 July)

In collaboration with:



Cooperazione
& Volontariato
Fondazione G. Tovini - ETS

Decentralized water and waste management systems: appropriate technologies and solutions for resilience and sustainability

Rural and isolated communities in developing countries

Monday 24th June (in person)

Morning session

09:30 Participant registration and welcome

10:00 Presentation of the Summer School/BIP - S. Sorlini

10:15 The role of appropriate technologies in water, sanitation and solid waste for resilience and sustainability

- Environmental aspects – S. Sorlini
- Health aspects - A. Matteelli
- Social aspects (TBD)
- Economic aspects (TBD)

12:00 Discussion and participant presentation

13:00 Lunch

Afternoon Session

14:00 Presentation of the PhD course - Curriculum "Appropriate Methodologies and Techniques in International Development Cooperation": opportunities for students and impact on projects - M. Vaccari

14:30 The experience of the PhD students

Technological Track

Disaster preparedness in drinking water supply - M. Pezzato

Revitalizing resources: valorisation of graphite from end-of-life Li-ion batteries through sustainable recovery - D. Premathilake

Health Track

Lifestyle assessment in rural and urban areas, Sub Saharan Africa: the value of Global Health - G. Di Rosario

15:30 - 18:00 Decentralized systems for wastewater treatment - C. Luethi, S. Ubbiali)

- Sanitation Safety Plan for rural and isolated communities

Tuesday 25th June (in person)

09:00-13:00 Decentralized systems for wastewater treatment - C. Luethi, S. Ubbiali

- Technologies for wastewater treatment in rural and isolated communities
- Resource recovery in rural areas
- Resilience of WASH services

13:00 Lunch

14:00-17:00

- Case studies / working group

17:30-19:00 Intercultural guided tour to the old town - F. Martinelli

Wednesday 26th June (in person)

09:00-13:00 Decentralized solid waste management (DSWM) - T. Tudor and M. Vaccari

- Technologies options for DSWM in rural and isolated communities
- The problem of burning garbage in rural areas
- Composting organic waste
- Resilience of DSWM services

13:00 Lunch

14:00-18:00

- Case studies / working group

Thursday 27th June (in person)

09:00-13:00 Decentralized systems for drinking water management – S. Sorlini (TBD)

- Management of environmental impacts and risks in decentralized water systems
- Technological solutions for the treatment of drinking water in rural and isolated areas
- WSP for rural and isolated communities
- WHO guidelines for small drinking water supply systems
- Resilience of water supply services

13:00 Lunch

14:00-18:00

- Case studies / working group

Friday 28th June (in person)

09:00-11:00 Water quality control, based on physico-chemical and microbiological control parameters, n sanitation systems and reuse of treated water - R. Mosteo

11:00-13:00 Sustainability and resilience of decentralized systems for water and sanitation - A. Albuquerque

13:00 Lunch

14:00-18:00

- Case studies / working group
- Visit to CeTamb laboratory

Monday 1st July (remote)

9:00-09:15 Introduction - S. Sorlini

09:15-11:15 Decentralized systems for wastewater treatment and reuse in rural areas - A. Albuquerque

- Technologies and solutions
- Nature-based solutions (NbS)

11:15-13:00 Water quality monitoring for water supply and wastewater in isolated communities in Brazil - L. Carneiro

Tuesday 2nd July (remote)

9:00-11:30 Conventional and advanced oxidation processes for disinfection and organic compounds removal - R. Mosteo

11:30-13:00 Discussion and conclusion – S. Sorlini, A. Albuquerque, R. Mosteo

SPEAKERS

Antonio Albuquerque	Universidade da Beira Interior (PT)
Lilian Carneiro	Federal University of Goiás (BR)
Christoph Lüthi	Sandec/EAWAG (CH)
Federica Martinelli	FAI (IT)
Alberto Matteelli	University of Brescia (IT)
Rosa Mosteo	Universidad Zaragoza (ES)
Saroj Sharma	IHE Delft (NL)
Sabrina Sorlini	CeTamb, University of Brescia (IT)
Terry Tudor	UKRI-BBSRC (UK)
Sara Ubbiali	Sandec/EAWAG (CH)
Mentore Vaccari	CeTamb, University of Brescia (IT)

EXTRA ACTIVITIES

- Visit to CeTamb laboratory of appropriate technologies, DICATAM Department
- Intercultural integration and guided tour to the old town center of Brescia

PhD Students

Gianluca Di Rosario	University of Brescia (IT)
Maria Pezzato	CeTamb, University of Brescia (IT)
Dilshan Premathilake	CeTamb, University of Brescia (IT)