



Course unit English denomination	Sustainable environmental management of water, wastewater and waste
Teachers in charge (if defined)	Maria Cristina Lavagnolo Valentina Grossule Roberto Raga
Teaching Hours	24
Number of ECTS credits allocated	4
Course period	July
Course delivery method	<input checked="" type="checkbox"/> In presence <input type="checkbox"/> Remotely <input type="checkbox"/> Blended
Language of instruction	English <small>max 3750 caratteri</small>
Mandatory attendance	<input checked="" type="checkbox"/> Yes (60% minimum of presence) <input type="checkbox"/> No
Course unit contents	<p>Circular economy of water and resources. Innovative systems of urban water and waste management for the sustainable recovery of resources and energy. Centralized and decentralized systems. Application of innovative solutions for the management of water and waste in different contexts (domestic waste, industrial waste, waste in space). The state of the art of research in the management of water, wastewater, and waste, and frontier research (digitalization). Closing the material cycle: carbon sink and innovative solutions for back to earth. Integrated management of the remediation of old landfills and of residual waste to be disposed in new landfill sectors. Analysis of case studies. Description of lab scale tests designed for the simulation of waste disposal in innovative landfill sectors. Analysis and elaboration of experimental data. Comparison of data from lab-scale tests and data from full scale installation. Comparison of laboratory data with data from full-scale plants. Examination of case studies and data processing.</p>
Learning goals	<p>The student will know the most advanced approaches to integrated water and waste management and will be able to evaluate which tools can be considered for a sustainable and intelligent design of liquid and solid waste management systems in urban areas. Based on the needs aroused by the analysis of real cases, the student will learn to design and manage lab-scale tests to simulate innovative landfill management options and how to analyse and elaborate the experimental data, critically discussing the effectiveness of the solutions adopted.</p>
Teaching methods	Frontal lectures, active use of on line tools and group works
Course on transversal,	<input type="checkbox"/> Yes <input type="checkbox"/> No



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interdisciplinary,  
transdisciplinary  
skills

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Available for PhD  
students from other  
courses

Yes  
 No

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Prerequisites  
(not mandatory)

Basic chemistry and knowledge on pollution phenomena

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Examination  
methods  
(in applicable)

Multiple choices quiz

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Suggested readings

All the study materials will be given by teachers

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Additional  
information

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