	Implementation schedule/day and time	Title of the lecture	Partner University	Lecturer	*Learning outcomes*
Day 1 **Lecture 1**	**28/01/2026** **10.00-11.30 CET**	**Integrated Sustainable Waste Management and Circular Economy Technical Circular Economy and Solid Waste Flows**	**UROS**	**Oumaima Mathlouthi**	✓ *Understand the relationship between waste management systems and climate change.* ✓ *Identify how waste generation, treatment, and disposal contribute to greenhouse gas emissions.* ✓ *Recognize the role of sustainable waste management in climate mitigation strategies.*
Description of the course	*This lecture explores the link between waste management practices and climate change. It highlights how waste generation and treatment contribute to greenhouse gas emissions and discusses sustainable strategies to minimize environmental impacts.*				
Day 1 **Lecture 2**	**28/01/2026** **11.30-13.00 CET**	**Climate-Responsive Waste Solutions, Circular Economy Principles, and the Role of EPR**	**UROS**	**Oumaima Mathlouthi**	✓ *Explain the concept and principles of Extended Producer Responsibility (EPR). Understand how EPR supports circular economy models and sustainable production.* ✓ *Evaluate examples of EPR implementation and their environmental and economic benefits.*
Description of the course	*This lecture introduces the concept of EPR and its role in advancing the circular economy. It examines how producer responsibility and sustainable product design can reduce waste and promote resource efficiency.*				
Day 2	**29/01/2026** **10.00-13.00 CET**	**Valorising waste products from the fisheries and aquaculture into sutainable biomaterials**	**SETU**	**Adriana Cunha Neves**	✓ *Identify waste products with potential to became biomaterials* ✓ *Identify challenges of utilising waste was a base for the generation of biomaterials* ✓ *Differentiate materials labelled bioplastics and their impact in the environment* ✓ *Describe of transformation of biomass waste in biomaterials* ✓ *Identify applicabilities of biomaterials arising from waste*

Description of the course	*This lecture explores the sustainable transformation of marine-derived waste, such as fish and shellfish by-products, and seaweed residues, into high-value biomaterials. Students will examine the chemical, biological, and engineering principles behind converting these waste streams into biopolymeric materials. Emphasis is placed on environmental impact, circular-economy strategies,testing methods and applicabilities sectors such as packaging, agriculture, construction, cosmetics, and biomedical products. The lecture will provide case studies and practical on-line activities,and the learners will gain understanding of how marine derived biomass waste can help drive innovation in sustainable materials.*				
Day 3	**30/01/2026 10.00-13.00 CET**	**Disaster waste management**	**LRUniv**	**Gaïa Marchesini**	✓ *Identify disaster waste and their particularity.* ✓ *Understand the impacts of a disaster on the waste system.* ✓ *Understand how the waste system reorganises to answer to the post-disaster constraints.* ✓ *Introduce the deployment of a qualitative field study.* ✓ *Introduce the use of functional analysis to study a sociotechnical urban system.*
Description of the course	*Disasters create huge amount of waste and disorganize the waste management system. This lecture will introduce the challenges of disaster waste management (type of waste, difficulties, stakeholders involved). Methodologically, it will present the deployment of a field survey, and the use of functional analysis to study sociotechnical system (here the waste system) under constraint (here "natural" disaster").*				
Day 4 Lecture 1	**02/02/2026 10.00-13.00 CET**	**Coastal Waste History & Stakes**	**LRUniv**	**Alexandre Camino**	✓ *Understand the relationship between waste management systems and climate change.* ✓ *Identify and evaluate sustainable waste management practices and technologies.*
Description	*Stakes of waste. (planetary limits, ecological injustices and domination related to waste management) and international responses (treaties and policies) with a focus on the European ones and urban coastal areas specificities.* *Waste management introduction. History, overview of waste definitions, kind of waste (organic, plastic, electronic, hazardous) and their life cycle.*				
Day 4 **Lecture 2**	**02/02/2026 10.00-11.30 CET**	**Coastal Waste Actors & Strategies**	**LRUniv**	**Alexandre Camino**	✓ *Identify and evaluate sustainable waste management practices and technologies.* ✓ *Demonstrate knowledge of international frameworks and strategies such as EPR and the circular economy.*

Description of the course	*Actors and strategies: challenges and barriers. Identifying the key actors (governments, companies, communities), elaborating strategy from instruments and examining challenges, resistance through case studies.* *Policy development interactive workshop. Students develop waste management policies for a simulated coastal city, integrating knowledge from previous sessions.*				
Day 5	**03/02/2026** **10.00-13.00 CET**	**Advanced biofuels' production from woody biomass and application in transport system**	**FREDU**	**Charalambos Chasos**	✓ *List the EU initiatives and strategies for carbon emissions reduction and describe the contribution of each sector in carbon dioxide emissions.* ✓ *Present data of different types of wood biomass feedstock occurring widely in EU countries, including feedstock properties and composition.* ✓ *List the main processes for woody biomass biorefineries and the associated energy needs and emissions.* ✓ *Analyse the processes and the energy requirements for biorefinery systems, and evaluate the related production yield of biofuels.* ✓ *Describe carbon emissions' mitigation measures for the transport system using alternative fuels and biomass derived advanced biofuels.*
Description of the course	*EU has renewed interest for the wider use of biomass for energy production in order to meet net-zero carbon energy production by 2050, while transport is responsible for almost one third of the carbon dioxide (CO2) emissions of the energy sector (reference year 2018). To this end, it is required to provide methodologies and tools in order to assess the energy requirements and the associated CO2 emissions for the biorefinery processes that utilize waste biomass for the conversion into solid fuels (ie. pellets) and/or advanced biofuels. The first objective of the course is to present the current EU environmental legislation and directives placing emphasis in biomass processing and biorefineries. Secondly, to assess the impact of biomass pretreatment and processing on the environment accounting energy input and production of CO2 emissions in biorefineries. Finally, to provide guidelines on the adaptation of advanced biofuels in transport systems including maritime transport, for the mitigation of CO2 emissions. The theoretical part of the course is complemented by short training in computer programing with MATLAB software, and practical use cases of a small scale woody biomass biorefinery and a two-stroke large marine internal combustion engine are investigated.*				