

<b>Module: Residue management and valorisation</b>						
<b>Course: Economic, environmental and legislative aspects of plastic waste</b>						
<b>Educational profile: general</b>						
<b>ECTS points 1</b>						
<b>Education level: 5 EQF</b>						
<b>Prerequisites</b>	Secondary education Knowledge of the basics of natural sciences					
<b>Target group</b>	A course dedicated to people who want to gain and deepen their knowledge of economic, environmental and legislative aspects of polymer packaging waste in the context of the development of the circular economy					
<b>CLASS LANGUAGE</b>	ENGLISH					
<b>LECTURER</b>						
<b>Number of hours of classes within individual forms of classes</b>	Lectures	Classes	Workshops	Seminar	Project	Laboratories
	5	2.5	2.5			
<b>COURSE OBJECTIVES</b>	C1. Acquiring knowledge in economic and environmental analysis of plastic waste handling  C2. Acquiring knowledge in European Union's plastic strategy					
<b>Reference to learning outcomes</b>	<b>Description of learning outcomes</b>				<b>Verification of learning outcomes</b>	
<b>Knowledge</b>						
<b>C1</b>	Theoretical basis of knowledge about economic and environmental impact of plastic waste handling.				Media follow-up	
<b>C2</b>	Regulative legislation concerning reusability and recyclability				Media follow-up	
<b>C2</b>	New legislation regarding recycling rates in the European Union.				Media follow-up	



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Skills		
C1	The student can evaluate economic and environmental aspects of plastic waste management	Role play
C2	The student will learn how to comply with legal regulations	Role play
C2	The student will ensure compliance with environmental legislation	Role play
Responsibility and autonomy		
C1	Responsibility on decision making of better plastic waste management regarding environmental and economic aspects.	Individual portfolio
C2	Responsibility on the compliance with legislation.	Individual portfolio
<b>Students' own workload (in didactic hours 1h did.=45 minutes)**</b>		
Participation in lectures	5	
Participation in classes	2.5	
Participation in workshops	2.5	
Preparation to classes	2.5	
Preparation to lectures	2.5	
Preparation to an examination	2.5	
Project tasks	5	
Credit/examination	2.5	
others (indicate which)		
<b>TOTAL:</b>	<b>25</b>	
<b>ECTS points:</b>	<b>1</b>	
<b>PREREQUISITES</b>	Lectures	Seminars
<b>COURSE CONTENT</b>	1. Economic and environmental analysis of plastic waste handling - Landfilling - Incineration with energy recovery - Plastics recycling 2. European Union's plastic strategy - Key elements of the strategy	1. The future of European policy on plastics



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	<ul style="list-style-type: none"> <li>- Policies not included the strategy</li> <li>- Defining the scope of the directive</li> <li>- Selecting policy measures for assessment</li> <li>- What stakeholders thought of measures</li> <li>- Assessing the main impacts</li> </ul>	
<b>LITERATURE (compulsory reading)</b>	<p>Introduction to Plastics Recycling. Vanessa Goodship. Smithers Rapra Technology Limited. 2007</p> <p>Understanding Plastics Recycling. Natalie Rudolph, Raphael Kiesel, Chuanchom Aumnate. Hanser Publications.</p> <p>Polymers : The Environment and Sustainable Development. Adisa Azapagic. Wiley.</p>	
<b>OPTIONAL LITERATURE</b> (including at least two items in English, either books or articles)		



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<p><b>SCHOLARLY PUBLICATIONS BY PERSONS WHO CONDUCT CLASSES, WHICH ARE RELATED TO THE MODULE SUBJECT</b></p>	<p><u>Campus Iberus</u></p> <p><b>Cristina Nerín</b> is Full Professor of Analytical Chemistry at the University of Zaragoza (Spain). Member of WG Recycling in EFSA from 2010 to 2018 and Director of Master in Environmental Engineering at the University of Zaragoza from 1990 to 2012. Research topics: Food contact materials, virgin and recycled, migration, NIAS and development of new materials.</p> <p><b>Robert Soliva-Fortuny</b> is full professor in the area of Food Technology at University of Lleida. His research is driven by the development of high-quality, safe and healthy products by combining novel and conventional processing and packaging techniques. He has been working on edible and biodegradable films and their application to MAP systems.</p> <p><b>Alberto Navajas</b> is Assistant Professor at the Public University of Navarre (Spain) and member of the research unit Chemical Reactors and Processes for the Valorization of Renewable Resources. Research topics: Photocatalyst, and Ecodesign by life cycle assessment. Teaching experience: Chemistry, Polymeric Materials, and Ecodesign.</p> <p><b>Elena Canellas</b> is Senior Doctor at the University of Zaragoza, Spain. Degree in Biochemistry, Master in Environmental Engineering and PhD- Doctor in Analytical Chemistry at the University of Zaragoza. She obtained an Inncorpora-Torres Quevedo official grant for doing the postdoc in the company Samtack SL (Barcelona). Research topics: migration study of toxic or carcinogenic non intentionally added substances (NIAS) from food packaging to food focusing on all types of packaging including bioplastics and recyclable plastics, development of active packaging to prevent food spoilage.</p> <p><u>Ecoembes</u></p> <p><b>Daniel Menchaca</b> is Telecom Engineer (Universidad de Zaragoza) with a master degree in Project Management with more than 19 years of experience leading with digital, smart cities and sustainability projects. Now, working in the field of</p>
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	<p>smart waste management with a strong committed to the environment and the Circular Economy as part of Ecoembes' The Circular Lab.</p> <p><b>David Cenicerros</b> is a BA graduate, master on Teaching in Economics. Specialized on Circular Economy and Design Methodologies for innovation, currently embarked on an entrepreneurial project called Sustained focused on developing open innovation strategies with companies for boosting their transition to a circular model.</p>
<b>TEACHING METHODS</b>	<p>Lecture Team work Practical tasks Case study Working with text Error identification Peer Review</p>
<b>TEACHING AIDS</b>	<p>Presentations Role play script Media Contents</p>
<b>FORM AND CONDITIONS OF ASSESSMENT</b>	<p>No exam, media follow up assessed by teacher, peer and teacher evaluation of participation role play, portfolio assessed by teacher, self-assessment as a part of portfolio All these have to be completed to pass the course.</p>



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