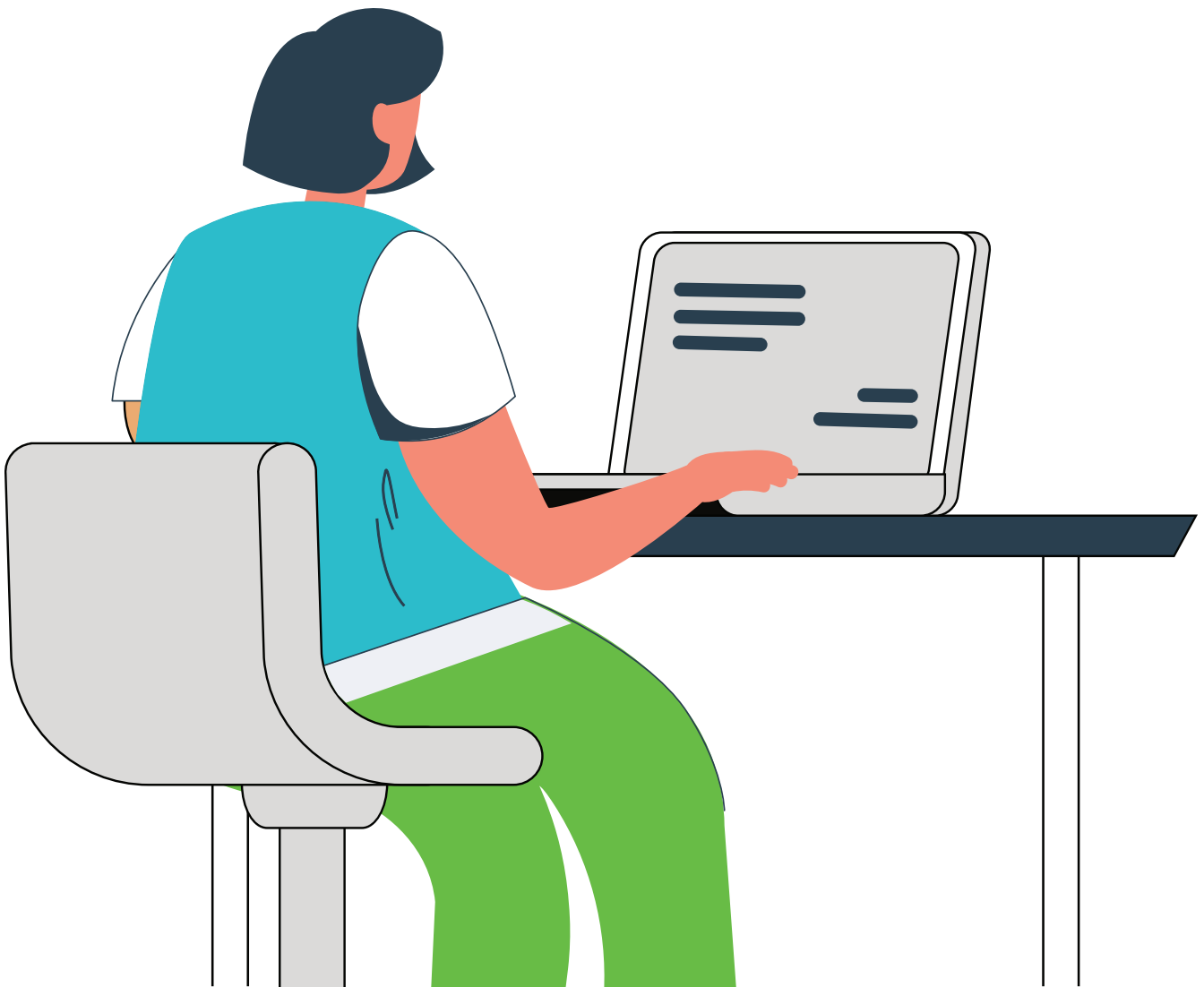


# eco Ai circular



## Lesson Plan



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## Building a greener future in electronics production

### Lesson Plan

Equipment	Target Group	Goal
Projector (optional), computer, internet connection.	Students in vocational training programs in finance and administration under the guidance of their instructors.	The challenge's goal is improving sustainability in product manufacturing, using EuroTech Industries' cell phones as a case study.

### Description

Designing sustainable products is a cornerstone of the circular economy, rooted in the three fundamental principles of sustainable development. This challenge invites students to rethink product design of a cell phone, focusing on minimizing resource use and waste impact. Students will explore how a cell phone company can innovate to radically transform traditional production and design practices that align with sustainable economy principles.

Learning Objectives	Expected outcomes	Competences
<ol style="list-style-type: none"> <li>Understand and evaluate the extent of pollution caused by the electronics industry.</li> <li>Understand the key sustainability challenges in the electronics industry.</li> <li>Identify and select sustainable materials for the EcoMobileX1 cell phone.</li> <li>Apply sustainable design principles for the EcoMobileX1 cell phone.</li> </ol>	<ol style="list-style-type: none"> <li>Critically evaluate the environmental impact of the electronics industry.</li> <li>Identify major pollution challenges within the electronics sector.</li> <li>Define the primary sustainability challenges faced by the electronics industry.</li> <li>Select appropriate sustainable materials for designing an eco-friendly phone.</li> <li>Develop an innovative, environmentally responsible concept for a sustainable phone model, balancing ecological impact and functionality.</li> </ol>	<p>C1-Ability to sustainably manage and reuse the company's natural resources and materials.</p> <p>C1.2. Contribute to the preservation of natural resources such as water, energy and raw materials.</p> <p>C2-Ability to identify and assess the environmental and social risks associated with the company's projects and economic decisions.</p> <p>C2.2. Understand regulations and ethical standards related to sustainable resource management.</p> <p>C3- Ability to promote ethical and sustainable business practices with a positive impact on society and the environment.</p> <p>C3.1Apply corporate social responsibility and ethical criteria in business actions and decisions.</p>

<b>Classroom Setting</b>	Students can work in pairs, groups, or individually
<b>Prior Knowledge Required</b>	Challenge 1 completed



## Learning Activities Overview

### No.1 / Learning and discussing about the importance of sustainability in electronics manufacturing



Objective	Duration	Training Method	Equipment Needed
Comprehend the toxic impact of electronic industry. Identification and selection of sustainable material.	3 hours	Exercise - Group or Individually	Computer, Internet connection, Projector (optional)

### Learning Resources or/and Assignments

After watching the videos listed Materials Listed for this activity, students can resolve the Assignment 1 .

<b>Mandatory / Optional</b>	Mandatory
<b>Use of EcoAI tool</b>	Consider using the EcoAI Assistant to deepen the understanding of e-waste and sustainable materials in mobile phones. How can these resources inform your decisions and strategies in developing sustainable practices for mobile phones?

### No.2 / Reading and discussing about the sustainability in electronics manufacturing



Objective	Duration	Training Method	Equipment Needed
Expanding the knowledge and developing critical thinking about circular economy , electronic manufacturing and developint strategies for circular economy implementation	8 hours	Exercise - Group or Individually	Computer or paper



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### Learning Resources or/and Assignments

After reading the documents listed for this activity, students can discuss the questions in Assignment 2. The instructor can choose the most important questions. It is not necessary discuss all of them

<b>Mandatory / Optional</b>	Mandatory
<b>Use of EcoAI tool</b>	Consider using the EcoAi Assistant to add supplementary comments to the provided answers.

### No.3 / Analysis and resolution of the Case Study EcoMobileX1’s Green Efficiency

Objective	Duration 	Training Method	Equipment Needed
<p>Evaluate the life cycle of the EcoMobileX1 printed circuit boards (PCBs).</p> <p>Develop a plan to improve the EcoMobileX1 sustainability by focusing on the reuse and repair of printed circuit boards (PCBs).</p>	8 hours	Exercise - Group or Individually	Computer, Internet connection


### Learning Resources or/and Assignments

After reviewing the case study EcoMobileX1’s Green Efficiency, students should proceed to answer questions in Assignment 3. Our EcoAI Assistant can provide you more information about the main stages of manufacturing a cell phone.

<b>Mandatory / Optional</b>	Mandatory
<b>Use of EcoAI tool</b>	<p>Utilize the EcoAI Assistant to provide guidance to students for the following questions:</p> <ol style="list-style-type: none"> <li>1. What criteria should we consider when identifying sustainable materials for PCB (Printed Circuit Board) manufacturing? Encourage students to think about factors such as environmental impact, availability, cost, and performance.</li> </ol>

<b>Use of EcoAI tool</b>	<ol style="list-style-type: none"> <li>2. Which sustainable materials can replace conventional ones in PCB manufacturing, and what are the benefits of these alternatives? Students should consider innovative materials that offer both ecological advantages and technical viability.</li> <li>3. What strategies can be implemented to enhance the reuse of PCB components, and what challenges might arise in the process? How can these challenges be addressed? This question prompts students to think critically about component design and the logistics of component reuse.</li> <li>4. What measures can be taken to facilitate the repair of PCBs in mobile phones? Students should explore design strategies and support systems that make repairs more accessible and efficient.</li> <li>5. How could EuroTech Industries incentivize customers to choose repair over replacement? Encourage students to brainstorm potential incentives such as discounts, loyalty programs, or educational initiatives that promote the value of repair.</li> <li>6. What ecological or sustainable design principles can be applied in the manufacturing of the EcoMobileX1? This question will help students analyze and propose design practices that minimize environmental impact.</li> <li>7. How can we design PCBs to ensure they are easier to repair and reuse? Students should consider modular designs and standardized components that simplify the repair process.</li> </ol>
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#### No.4 / Developing a plan to implement sustainable strategies for the EcoMobileX1's

Objective	Duration 	Training Method	Equipment Needed
Develop and present a comprehensive action plan for the EcoMobileX1 phone	4 hours	Exercise - Group or Individually	Computer, Internet connection, Projector (optional)

#### Learning Resources or/and Assignments

Students are required to develop and present a comprehensive action plan as the final component of the case study, which will also serve as Assignment 4. We suggest to use the template (Project Template) provided in the Material List.

<b>Mandatory / Optional</b>	Mandatory
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<b>Use of EcoAI tool</b>	Utilize the EcoAI Assistant to assist students in identifying the necessary changes to the production process that would enable the reuse and repair of printed circuit boards (PCBs). Additionally, use the EcoAI Assistant to provide an explanation of the '10 Rs' of sustainability, if needed.
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**No.5 / Developing a plan to implement sustainable strategies for the EcoMobileX1's**

Objective	Duration	Training Method	Equipment Needed
Evaluation of the learning process	15 mins	Individually	Computer, Internet connection
<b>Mandatory / Optional</b>	Mandatory		

**TOTAL DURATION**



**23 hours + 15 mins**



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