



LESSON PLAN

BIO MATTERS

ZONE: Innovation Zone **AGE GROUP:** 19-24 **EQUIPMENT:** Microwaves, Measuring cup, mold, wooden sticks, paper cups

MATERIALS: Water, Gelatin, Coffee ground

DESCRIPTION: Participants will gain insight into the fascinating process of crafting bioplastics with coffee ground as the primary ingredient. During this workshop, will start creating the mixture, following the step-by-step provided by the instructor. Once the compost reaches its ideal state, the instructor will provide each participant with their mold (in this case a coaster). Participants will then individually pour and flatten their compost into the mold provided. As the session concludes, participants will explore the potential uses for these innovative materials while also discussing their inherent limitations.

ENGINEERING DESIGN CHALLENGE:

Every day, agriculture generates an enormous amount of waste. One promising approach is to transform this agricultural waste into valuable resources such as compost, bio-plastics, bio-fuels, and plastic alternatives. The focus of this workshop challenge is to create bioplastics from agricultural waste that will react to heat in order to protect plant to over exposure to sun.

LEARNING OBJECTIVES:

After attending this session, participants will be able to:

- Understand the environmental impact of agricultural waste and its potential for conversion into sustainable materials like bio-plastics.
- Acquire hands-on knowledge and skills in the process of creating bioplastics from agricultural waste, including the key steps and techniques involved.
- Explore the broader implications and applications of bio-plastics as an eco-friendly alternative to traditional plastics

LESSON PLAN (Pg 2)

Time / Duration

Presentation

15 min

- 1- Introduce yourself.
- 2- Introduce students to each other (Ice breaking). / Start introducing the workshop through a series of questions.
- 3- Explain what we are going to do today.

1 h

Activity:

- 1- In depth presentation about bioplastic and their applications.
- 1- Unveiling the Step-by-Step Process to create a bio-plastic
- 2- Pour the ingredients in a cup:
 - First (4 parts of water mixed with 2 parts of gelatin, mix
 - Second hit the mixture in the microwave
 - Add 4 part of coffee ground and mix
 - Put it in the microwave for another 3-5 seconds. then mix.
 - Pour the mix in the mold and wait 5-10 minutes to dry.

Remove the piece from the mold and let it dry under something heavy for at least one week, make it "breath" everyday.

15 min

Final assessment, consideration of possible different application for this type of material.

Materials/requirements

Computer, internet access, screen

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Equipment: microwave

Materials: water, gelatin, coffee ground



**THANK
YOU**

