

Extended Abstract

# Developments of Tertiary Level Studies in Biotechnologies and Their Applications in Environmental Bioengineering <sup>†</sup>

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## 1. Introduction

To develop a unique block of learning in the field of Environmental bioengineering, pass elements from a linear bioeconomy to a circular bioeconomy need to be introduced. The circular bioeconomy represents an innovative economic model and a regenerative system too, in which resource input, waste emission, and energy losses are minimized by slowing, closing, and narrowing energy and material loops [1,2].

## 2. Materials and Methods

A methodology based on Survey opinion was applied to acquire the student’s preferences regarding courses of Environmental Bioengineering [3–5].

## 3. Results

Based on student responses, a new curriculum will be developed for environmental bioengineering courses from the Master or Doctoral program. The proposed content will be divided into eight modules, respectively: (1) Main development domains in the European bioeconomy model of transition; (2) From present bioeconomy to circular and sustainable bioeconomy through waste valorization, based on solving the different categories of requirements to implement the new economic path; (3) Biorefinery for municipal waste processing; (4) Food waste biorefinery:

sustainable strategy; (5) Advanced lignocellulosic biorefinery to exploit the forest potential; (6) Improved interest to develop blue bioeconomy as future; (7) Development of new business models for circular bioeconomy. Innovation and project management; (8) Entrepreneurship and intellectual property in circular bioeconomy. Commercialization and marketing of bio-based products.

#### 4. Conclusions

The new curricula structure will cover all sectors and systems that rely on biological resources (animals, plants, micro-organisms, and derived biomass, including organic waste), the cross-sector of bio-based industries, markets, products, and processes to build a new structure of environmental bioengineering courses for Master and/or Doctoral Programmes of European Universities.

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