Course Descriptions None 2022-2023

Course Title	Biobased Materials
Course Code	BENC2015
ECTS Credits	5,0
Assessment	Whole/Half Grades

Period

Period	Start	End	Mon	Tue	Wed	Thu	Fri
2	31-10-2022	16-12-2022	X		X		L

Level	no level
Coordinator	Yvonne van der Meer For more information:yvonne.vandermeer@maastrichtuniversity.nl
Language of instruction	English
Goals	* To provide an introduction and overview of renewable feedstock types and their biological and chemical pathways via biorefineries towards biobased building blocks, chemical intermediates, biobased materials, and products; * To provide students with a detailed understanding of waste management of biobased materials and the circularity approaches (7Rs - Redesign, Reduce, Reuse, Repair, Renew, Recover and Recycle) for (more) circular biobased materials * To discuss important aspects of the sustainability of biobased materials: environmental impact (incl. carbon footprint), economic and social impacts * To identify and discuss the challenges and opportunities (technological, sustainability, and societal) for biobased and circular materials in the transition towards a biobased and circular economy and society (technological, sustainability, and societal aspects)
Description	PLEASE NOTE THAT THE INFORMATION ABOUT THE TEACHING AND ASSESSMENT METHOD(S) USED IN THIS COURSE IS WITH RESERVATION. A RE-EMERGENCE OF THE CORONAVIRUS AND NEW COUNTERMEASURES BY THE DUTCH GOVERNMENT MIGHT FORCE COORDINATORS TO CHANGE THE TEACHING AND ASSESSMENT METHODS USED. THE MOST UP-TO-DATE INFORMATION ABOUT THE TEACHING/ASSESSMENT METHOD(S) WILL BE AVAILABLE IN THE COURSE SYLLABUS. Concerns about climate change and the secure supply of industrial feedstock sources have accelerated the interest in and the development of biobased materials. However, scientists, companies, and policymakers face technological, environmental, and societal challenges to develop the materials of the future that fulfil the required functions in society and are also more sustainable. This course aims to create a critical as well as a creative and inventive circular attitude towards biobased materials. Students will be introduced to the field of Biobased Materials in a multidisciplinary approach in which biology, chemistry, engineering, and sustainability studies are integrated to study and design the materials of the future. This creates an opportunity to not only replace currently made materials (like plastics and polymers) with biobased alternatives but also to produce new materials derived from renewable biological sources. Moreover, circularity principles (the 7 Rs) and improved end-of-life scenarios (biodegradation, composting, recycling) will play a central role in providing the most sustainable materials.
Literature	A list of selected scientific papers and (policy) reports will be provided during the course.
Prerequisites	BENC1007 Materials Engineering BENC1008 Experimentation in Science and Engineering
Keywords	
Teaching methods	Presentation / Lecture
Assessment methods	Written Exam / Presentation
Evaluation in previous academic year	For the complete evaluation of this course please click http://iwio-sbe.maastrichtuniversity.nl/rapporten.asp?referrer=codeUM
This course belongs to the following programme / specialisation	