1.	Field of study	Biophysics
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2022/2023 (winter term), 2023/2024 (winter term), 2024/2025 (winter term), 2025/2026 (winter term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

Module: Green Chemistry for Materials and Processes

Module code: W4-2BF-MB-21-06

1. Number of the ECTS credits: 6

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
MB_06_1	the students will have the knowledge and skills useful in designing the construction of products, materials, and plants with minimal impact on human health and the environment	KBF_K06 KBF_U11 KBF_W02	5 3 4

3. Module description

Description	The concepts that will be presented are the emerging ones of the Green Chemistry: atomic efficiency, heterogeneous catalysis and biocatalysis, replacement of solvents and toxic compounds, reaction and process intensification, conversion of biomass into valuable chemicals/materials, waste recycling, design and production of green products as bioplastics. Examples of industrial processes where this sustainability approach is adopted will be shown as the extraction of active biomolecules and biopolymers from biomass with green solvents (supercritical fluids, ionic/eutectic liquids) and enzymatic technologies, modification of natural fibers with enzymes, and green technologies (steam explosion, supercritical carbon dioxide, microwaves, etc).
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
MB_06_w_1	exam	Oral exam Requirement for examination: Knowledge on the tools and methodologies for the assessment of chemical, toxicological and environmental risk, life cycle analysis of products and	MB_06_1

		processes, environmental indicators, green design of chemicals, polymers, and materials.	

5. Forms of teaching

code	form of teaching			required hours of student's own work		assessment of the learning outcomes of the module
	type	description (including teaching methods)	number of hours	description	number of hours	
MB_06_fs_1	lecture	Detailed discussion by the lecturer of the issues listed in the table "module description" using the table and/or multimedia presentations	48	Supplementary reading, working with the textbook	102	MB_06_w_1