1.	**Field of study**	**Materials Science and Engineering**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2019/2020 (winter term), 2020/2021 (winter term), 2021/2022 (winter term), 2022/2023 (winter term)
4.	Level of qualifications/degree	first-cycle studies (in engineering)
5.	Degree profile	general academic
6.	Mode of study	full-time

Module: Chemistry 2

Module code: IM1A_CH2

1. Number of the ECTS credits: 4

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
IM1A_CH2_1	Learning basic issues of organic chemistry - learning the nature of the difference in reactions of inorganic and organic compounds and through that - possibilities of materials properties shaping. Understanding the nature of aliphatic and aromatic organic compounds structure and properties based on the electron structure and possible types of carbon hybridisation. Understanding relationships between an organic compound structure and potential possibilities to synthesise polymer materials of specified properties.	IM1A_W03	5
IM1A_CH2_2	The skill to analyse properties of organic compounds in relation to the creation by them of various polymer materials of specified properties. The skill to apply a proper, frequently complicated, nomenclature of organic compounds and to present their structure taking into account the phenomenon of isomerism.	IM1A_U01 IM1A_U06 IM1A_U09	2 2 5
IM1A_CH2_3	The awareness of the need for appropriate selection of organic compounds to synthesise polymer engineering materials of appropriate required properties.	IM1A_K01 IM1A_K02 IM1A_K05	2 3 1

3. Module description

Description	The Chemistry 2 module allows students to acquire the basic knowledge about organic chemistry. Owing to that students should be capable to make a proper choice of organic compounds to synthesise polymer engineering materials of required properties. The gained knowledge will allow understanding the relationships between the chemical composition, structure, type of monomer structure and specified practical properties of polymer materials. The gained knowledge shall also allow understanding significant properties of macromolecular organic compounds existing in the nature - sugars, starches, cellulose, and proteins.
Prerequisites	The knowledge of chemistry at the level of secondary grammar school is required.

4. Assessment of the learning outcomes of the module			
code	**type**	**description**	**learning outcomes of the module**
IM1A_CH2_w_1	Written examination	Verification of the knowledge based on the lectures content, recommended literature and attended classes.	IM1A_CH2_1, IM1A_CH2_2, IM1A_CH2_3
IM1A_CH2_w_2	Written test	The test of skills acquired during laboratory classes.	IM1A_CH2_1, IM1A_CH2_2, IM1A_CH2_3
IM1A_CH2_w_3	Report	Assessment of the skill to analyse results obtained during laboratory classes.	IM1A_CH2_1, IM1A_CH2_2, IM1A_CH2_3

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**	
IM1A_CH2 _fs_1	lecture	The lecture will present issues of aqueous electrolytic solutions chemistry and of organic chemistry. The presentation will comprise properties, synthesis methods and reactions characteristic of hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids, esters, nitrogen compounds and heterocyclic compounds.	30	The work comprising an independent analysis and acquiring the knowledge presented during the lectures, expanded by the literature materials shown and the recommended sources for the analysed issues.	40	IM1A_CH2_w_1, IM1A_CH2_w_2
IM1A_CH2 _fs_2	laboratory classes	Laboratory classes are aimed at mastering the skills required in a chemical laboratory, such as efficient use of laboratory glassware and simple equipment, performing simple qualitative analyses and syntheses of organic compounds.	30	Preparation to classes through independent studying of recommended issues.	30	IM1A_CH2_w_2, IM1A_CH2_w_3