1.	Field of study	Materials Science and Engineering
2.	Academic year of entry	2018/2019 (winter term)
3.	Level of qualifications/degree	first-cycle studies (in engineering)
4.	Degree profile	general academic
5.	Mode of study	full-time

Module: Chemistry 1

Module code: IM1A_CH1

1. Number of the ECTS credits: 5

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
IM1A_CH1_1	Understanding the relationships between the atomic structure of elements, their position in the periodic system, type of chemical bonds and potential properties of created engineering materials - ceramic, polymer and metallic materials. Learning basic issues of general and inorganic chemistry - learning the nature of the difference in reactions of inorganic and organic compounds and through that - possibilities of materials properties shaping. The knowledge of inorganic compounds classes - the skill to use proper nomenclature of inorganic compounds and to present their structure.	IM1A_W03	5
IM1A_CH1_2	The skill to analyse properties of inorganic compounds in relation to production possibilities of engineering materials featuring specific mechanical, electrical, magnetic, optical properties - ionic and covalent ceramic materials, metals and metallic alloys, composite materials.	IM1A_U01 IM1A_U06 IM1A_U09	2 2 5
IM1A_CH1_3	The awareness of the need of appropriate qualitative and quantitative selection of material's chemical composition to synthesise engineering materials of appropriate required properties.	IM1A_K01 IM1A_K02 IM1A_K05	2 3 1

3. Module description

Description	The Chemistry 1 module allows students to acquire the basic knowledge about general and inorganic chemistry. Owing to that students should be capable to make a qualitative and quantitative choice of materials' chemical composition to obtain materials with required properties. The gained knowledge will allow understanding the relationships between the chemical composition, structure, phase composition and specified (mechanical, electrical, magnetic, optical) practical properties of ceramic, metallic and polymer materials.
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_CH1_w_1	Written examination	Verification of the knowledge based on the lectures content, recommended literature and attended classes.	IM1A_CH1_1, IM1A_CH1_2, IM1A_CH1_3
IM1A_CH1_w_2	Written test	The test of skills acquired during the auditorium and laboratory classes.	IM1A_CH1_1, IM1A_CH1_2, IM1A_CH1_3
IM1A_CH1_w_3	Report	Assessment of the skill to analyse results obtained during laboratory classes.	IM1A_CH1_1, IM1A_CH1_2, IM1A_CH1_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_CH1 _fs_2	practical classes	The classes are aimed mainly at mastering the skill of proper writing the chemical equations and resolving diverse computational problems. Classes enhanced with discussion of issues presented during lectures.	15	Preparation to classes through independent studying of recommended issues.	50	IM1A_CH1_w_2
IM1A_CH1 _fs_3	laboratory classes	Laboratory classes are aimed at mastering the basic skills required in a chemical laboratory: preparing solutions of appropriate concentration, performing reactions with inorganic and organic compounds, performing simple quantitative analyses.	15	Preparation to classes through independent studying of recommended issues.	20	IM1A_CH1_w_2, IM1A_CH1_w_3
IM1A_CH1_fs_1	lecture	The lecture on chemistry will focus especially on the structure of atoms and its close relationship to the periodic table of elements. The correlation will be analysed between the state of valence electrons and a possibility to create chemical bonds: ionic, covalent, metallic, hydrogen, Van der Waals, and as a result to create basic types of materials: ceramics, polymers and metals. The first part of the lecture will be devoted to the general and inorganic chemistry.	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.	50	IM1A_CH1_w_1, IM1A_CH1_w_2