1.	Field of study	Materials Science and Engineering
2.	Academic year of entry	2017/2018 (winter term)
3.	Level of qualifications/degree	second-cycle studies (in engineering)
4.	Degree profile	general academic
5.	Mode of study	full-time

Module: Unconventional biomaterials

Module code: IM2A_NIEKON

1. Number of the ECTS credits: 3

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
IM2A_NIEKON_1	Acquiring the knowledge about bioresorbable materials, smart biomaterials, polymer medicine carriers, bioglasses and biosensors, learning the silicones application in medicine	IM2A_W06 IM2A_W10	5 2
IM2A_NIEKON_2	Acquiring the knowledge about biomaterials of natural origin - blood, connective tissue, bone, collagen fibres - collagen structure and properties.	IM2A_W07 IM2A_W09	5 5
IM2A_NIEKON_3	The skill of determining methods of intelligent textile materials manufacturing and methods of collagen obtaining	IM2A_K05 IM2A_U15 IM2A_U16	1 5 5
IM2A_NIEKON_4	Development of the awareness of engineering activities related to manufacturing of unconventional biomaterials impact on development of various areas of economy and of social life Showing the understanding of interactions originating as a result of undertaking the engineering activities affecting a human organism and the environment, and also the necessity to take responsibility for the decisions made. Demonstrating the awareness and possibility of sustained development of own skills and knowledge about the biomaterials structure designing.	IM2A_K01 IM2A_K02	2 5

3. Module description

Description	The module Unconventional biomaterials shall extend students knowledge about biomaterials. It will allow learning about the structure of bioresorbable materials, polymer medicine carriers, bioglasses and biosensors, learning the silicones application in medicine. Owing to that students shall acquire broader knowledge of biomaterials.
Prerequisites	It is required to achieve effects of education of physics, chemistry, crystallography, and biomaterials modules.

4. Assessment of the learning outcomes of the module			
code	**type**	**description**	**learning outcomes of the module**
IM2A_NIEKON_w_1	Written examination	Verification of the knowledge based on the lectures content, recommended literature and attended classes	IM2A_NIEKON_1, IM2A_NIEKON_2, IM2A_NIEKON_3, IM2A_NIEKON_4
IM2A_NIEKON_w_2	Written test	Checking the acquired skills of unconventional biomaterials recognition	IM2A_NIEKON_1, IM2A_NIEKON_2, IM2A_NIEKON_3, IM2A_NIEKON_4
IM2A_NIEKON_w_3	Test	Assessment of mastering the basic knowledge necessary for individual performance of a practical exercise	IM2A_NIEKON_1, IM2A_NIEKON_2
IM2A_NIEKON_w_4	Report	Assessment of the skill of understanding mechanisms of unconventional biomaterials action	IM2A_NIEKON_3, IM2A_NIEKON_4

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**	
IM2A_NIEKON_fs_1	lecture	The lecture shall enable understanding issues related to the structure of unconventional biomaterials as well as phenomena, processes and mechanisms enabling affecting their properties shaping.	30	The work with the recommended literature comprising independent acquisition of knowledge related to basic issues	25	IM2A_NIEKON_w_1
IM2A_NIEKON_fs_2	laboratory classes	The application of learned theoretical knowledge in practical learning of unconventional biomaterials. Exercises are performed by students individually with the use of equipment of teaching and scientific laboratories	15	Preparation of theoretical basics and issues related to the topic of performed exercise. Independent preparation of a theoretical introduction. Individual preparation of exercise results.	20	IM2A_NIEKON_w_2, IM2A_NIEKON_w_3