

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: Basics of materials science

Module code: IM1A_PNOM

1. Number of the ECTS credits: 7

2. Learning outcomes of the module			
code	description	learning outcomes of the programme	level of competence (scale 1-5)
IM1A_PNOM_1	Understanding of the structure and of significant characteristics of amorphous and crystalline materials; single- and poly-crystalline; mono- and polyphase materials; understand relationships between the structure and properties of engineering materials and the influence of phenomena and processes on the structure change.	IM1A_W05	4
		IM1A_W06	5
IM1A_PNOM_2	Learning phenomena, processes, and methods for structure forming as well as mechanisms responsible for mechanical properties changing.	IM1A_W07	3
IM1A_PNOM_3	The skill to analyse the structure and properties of engineering materials and to choose methods for materials structure and properties forming for technical applications.	IM1A_U09	5
		IM1A_U10	3
IM1A_PNOM_4	Development of the awareness of non-technical aspects for the used engineering materials; moulding of creative thinking.	IM1A_K02	2
		IM1A_K05	3

3. Module description	
Description	The module Basics of materials science shall enable that students are knowledgeable about the structure of engineering materials as well as about methods, phenomena, and processes enabling changes of such materials properties. Owing to that students shall achieve a better understanding of correlations between engineering materials structure and mechanisms affecting their properties. The understanding of relationships and correlations between engineering materials properties and their structure shall result in deepening the skill to shape the structure and properties of engineering materials for technical and medical applications.
Prerequisites	It is required to achieve effects of education of the modules: physics, chemistry, crystallography, materials testing methods and thermodynamics.

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
IM1A_PNOM_w_1	Written examination	Verification of the knowledge based on the lectures content, recommended literature and attended classes.	IM1A_PNOM_1, IM1A_PNOM_2, IM1A_PNOM_3, IM1A_PNOM_4
IM1A_PNOM_w_2	Written test	Checking the acquired skill of structure shaping methods and mechanisms responsible for mechanical properties changing.	IM1A_PNOM_1, IM1A_PNOM_2, IM1A_PNOM_3, IM1A_PNOM_4
IM1A_PNOM_w_3	Test	Assessment of mastering the basic knowledge necessary for individual performance of a practical exercise.	IM1A_PNOM_1, IM1A_PNOM_2
IM1A_PNOM_w_4	Report	Assessment of the skill to understand the structure shaping mechanisms and to connect them with engineering materials properties by a correct formulation of conclusions.	IM1A_PNOM_3, IM1A_PNOM_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	
IM1A_PNOM_fs_1	lecture	The lecture shall enable an understanding of issues related to the structure of engineering materials, phenomena, processes, and mechanisms enabling their properties shaping. The lecture is delivered with the use of multimedia, demonstrations and the „Materials science” software.	75	The work with the recommended literature comprising independent acquisition of knowledge related to basic issues.	25	IM1A_PNOM_w_1
IM1A_PNOM_fs_2	laboratory classes	The application of acquired theoretical knowledge to practical learning of engineering materials structure and of mechanisms enabling shaping their properties. Exercises are performed by students individually with the use of equipment of teaching and scientific laboratories.	75	Preparation of theoretical basics and issues related to the topic of performed exercise. Independent preparation of a theoretical introduction. Individual preparation of exercise results.	35	IM1A_PNOM_w_2, IM1A_PNOM_w_3, IM1A_PNOM_w_4