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: Materials testing methods 2

Module code: IM1A_MBM2

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_MBM2_1	Understanding phenomena used in testing the mechanical, electrical, and magnetic properties; learning the design and principles of specialised scientific-research instruments operation, used to describe the engineering materials properties.	IM1A_K05 IM1A_W08	1 5
IM1A_MBM2_2	Acquiring the skill to operate specialised scientific-research instruments; to perform simple experiments; to interpret results and to evaluate measurement errors.	IM1A_U08 IM1A_U11 IM1A_U21	5 5 5
IM1A_MBM2_3	Development of creative thinking.	IM1A_K05	3

3. Module description

Description	The module Materials testing methods 2 shall enable that students learn about phenomena and principles of operation and design of research instruments, which are applied in measuring techniques and methods used to characterise the structure and basic properties of engineering materials. Owing to that students shall master operation of scientific-research instruments and acquire the skill to interpret measurement results. The understanding of phenomena and principles of operation shall result in a skilful application of an appropriate testing technique to assess materials properties. Students shall master basic definitions of material quantities, the idea of material equations and general rules used in measuring techniques. They will learn selected methods illustrating the general approach and results obtained using these methods.
Prerequisites	It is required to achieve effects of education of physics, chemistry, mathematics, and crystallography modules.

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
IM1A_ MBM2 _w_1	Oral examination	Verification of the knowledge based on the lectures content, recommended literature and attended classes.	IM1A_MBM2_1, IM1A_MBM2_2, IM1A_MBM2_3
IM1A_ MBM2 _w_2	Written examination	Checking the knowledge of phenomena and principles of operation of the learned research instruments as well of the skill to choose an appropriate method for measurements and for measurement results interpretation	IM1A_MBM2_1, IM1A_MBM2_2, IM1A_MBM2_3
IM1A_ MBM2 _w_3	Test	Assessment of mastering the basic knowledge necessary for individual performance of a practical exercise.	IM1A_MBM2_1, IM1A_MBM2_2, IM1A_MBM2_3
IM1A_ MBM2 _w_4	Report	Assessment of the skill to analyse engineering materials structure and properties.	IM1A_MBM2_1, IM1A_MBM2_2, IM1A_MBM2_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_ MBM2 _fs_1	lecture	The lecture shall enable understanding phenomena and principles of instruments used in methods for characterising engineering materials structure and properties. The lecture is delivered with the use of multimedia.	30	The work with the recommended literature comprising independent acquisition of knowledge related to basic issues.	20	IM1A_ MBM2 _w_1
IM1A_ MBM2 _fs_2	laboratory classes	Application of the acquired theoretical knowledge to learn the skill of the method selection, research instruments operation, to interpret results and to evaluate measurement errors. Exercises are performed by students individually or in teams, with the use of equipment of teaching and scientific laboratories.	45	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_ MBM2 _w_2, IM1A_ MBM2 _w_3, IM1A_ MBM2 _w_4