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: Corrosion and corrosion protection

Module code: IM1A_KIOPK

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)
IM1A_KIOPK_1	Learning and understanding corrosion mechanisms and the corrosion action on engineering materials; understanding economic and business aspects of engineering materials corrosion.	IM1A_W14	5
IM1A_KIOPK_2	The skill to evaluate the type of corrosion damage and to suggest methods for its elimination and to select an effective corrosion protection depending on the material type and its work environment.	IM1A_U20	5
IM1A_KIOPK_3	The skill to operate scientific-research instruments and diagnostic systems based on anticorrosion methods, techniques and technologies.	IM1A_U11	1
IM1A_KIOPK_4	The capability to express opinions, to discuss and exchange opinions and to use expertise allowing to resolve a broad scope of engineering problems related to the corrosion of various groups of materials, including the engineering designing taking into account corrosion issues.	IM1A_K05 IM1A_U01 IM1A_U13	1 1 2

3. Module description

Description	The Corrosion and corrosion protection module shall ensure students the basic knowledge about the chemical and electrochemical action of the environment on engineering materials. The module shall enable that students are knowledgeable about corrosion types, corrosion damage types as well as traditional and modern methods for corrosion and materials corrosion resistance testing. The understanding of relationships between the type of corrosion damage and the type of material and the acting environment shall result in acquiring the skill to choose corrosion protections, to apply a complex protection and also the anticorrosion prevention for engineering materials for industrial applications.
Prerequisites	The knowledge of materials chemistry, materials electrochemistry, physics, and materials science modules is required.

4. Assessment of the learning outcomes of the module			
code	**type**	**description**	**learning outcomes of the module**
IM1A_KIOPK_w_1	Credits test	Verification of the knowledge based on the lectures content, recommended literature and attended laboratory classes.	IM1A_KIOPK_1, IM1A_KIOPK_2, IM1A_KIOPK_3, IM1A_KIOPK_4
IM1A_KIOPK_w_2	Written tests	Checking the skill to use the acquired knowledge to resolve the presented technical problems related to the corrosion damage evaluation and to make decisions on the method of corrosion protection for engineering materials.	IM1A_KIOPK_1, IM1A_KIOPK_2, IM1A_KIOPK_3, IM1A_KIOPK_4
IM1A_KIOPK_w_3	Weekly reports	The assessment of mastering the skill of independent performance of a practical exercise, of measurement results and measurement error analysis as well as of formulating the conclusions properly.	IM1A_KIOPK_3
IM1A_KIOPK_w_4	Interview	Assessment of understanding mechanisms of chemical and electrochemical corrosion processes, their interpretation and application in materials engineering issues.	IM1A_KIOPK_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_KIOPK_fs_1	lecture	The lecture shall enable understanding the nature of chemical and electrochemical action of a corrosive environment on engineering materials. It illustrates general rules of corrosion protection and of predicting the materials corrosion resistance. The lecture is delivered using demonstrations and modern audio-visual aids.	20	The work with the recommended literature comprising independent acquisition of knowledge related to basic issues. Performing a thematic review of scientific papers in computer databases, in particular in a foreign language.	35	IM1A_KIOPK_w_1
IM1A_KIOPK_fs_2	laboratory classes	Individual and team performance of chemical and electrochemical experiments illustrating the lecture issues in teaching laboratories and using scientific-research instruments in scientific laboratories. Independent processing of obtained results, preparing graphs, analysis of experimental error and formulation of conclusions.	25	Preparation of theoretical basics and issues related to the subject matter of performed exercise. Independent preparation of a theoretical introduction. Individual preparation of exercise results.	10	IM1A_KIOPK_w_2, IM1A_KIOPK_w_3, IM1A_KIOPK_w_4