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

## Module: Monographic lecture 1. Magnetic nanomaterials

**Module code:** IM2A_WM1_NMM

**1. Number of the ECTS credits:** 2

**2. Learning outcomes of the module**

| code | description | learning outcomes of the programme | level of competence (scale 1-5) |
|---|---|---|---|
| IM2A_WM1_NMM_1 | Understanding relationships between the structure and properties of magnetic nanomaterials, understanding phenomena of processes resulting in those materials properties changes. | IM2A_W12 | 5 |
| IM2A_WM1_NMM_2 | Learning phenomena, processes, manufacturing methods and mechanisms responsible for changing physical properties of magnetic nanomaterials. | IM2A_W11 | 3 |
| IM2A_WM1_NMM_3 | The skill to analyse the structure and properties of magnetic nanomaterials and to select manufacturing methods of magnetic nanomaterials for technical applications. | IM2A_K05<br>IM2A_U18 | 1<br>5 |
| IM2A_WM1_NMM_4 | Development of the awareness of the need to produce and to affect the structure to change magnetic nanomaterials properties. | IM2A_K01<br>IM2A_K04 | 5<br>5 |

**3. Module description**

| | |
|---|---|
| **Description** | The module Magnetic nanomaterials shall enable that students are knowledgeable about magnetic nanomaterials structure and about methods, phenomena, and processes enabling those materials manufacturing and properties changing. Owing to that students shall achieve a better understanding of correlations between manufacturing methods, magnetic nanomaterials structure and mechanisms affecting their properties. The understanding of relationships and correlations between those materials properties and their structure shall result in honing the skill to form materials of expected physical properties for applications in technology. |
| **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** |
| IM2A_WM1_NMM_w_1 | Written credits | Verification of knowledge based on the lectures content, recommended literature. | IM2A_WM1_NMM_1, IM2A_WM1_NMM_2, IM2A_WM1_NMM_3, IM2A_WM1_NMM_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_WM1_NMM_fs_1 | lecture | The lecture shall enable understanding issues related to the structure of magnetic nanomaterials, phenomena, processes, and mechanisms enabling affecting their properties shaping. The lecture is delivered with the use of multimedia and demonstrations. | 30 | The work with the recommended literature comprising independent acquisition of knowledge related to basic issues. | 35 | IM2A_WM1_NMM_w_ |