UNIWERSYTET IM. ADAMA MICKIEWICZA W POZNANIU

# Fabrication and analysis of surface nanostructures I

Educational subject description sheet

## Basic information

| | |
|---|---|
| **Study programme**<br>Fizyka (Physics of Advanced Materials for Energy Processing)<br>**Speciality**<br>-<br>**Organizational unit**<br>Faculty of Physics and Astronomy<br>**Study level**<br>Second-cycle programme<br>**Study form**<br>Full-time<br>**Education profile**<br>General academic | **Didactic cycle**<br>2024/25<br>**Subject code**<br>04FENS.22S.03261.24<br>**Lecture languages**<br>English<br>**Course type**<br>Elective<br>**Block**<br>specialty subjects |

| | |
|---|---|
| **Subject coordinator** | Maciej Wiesner |
| **Lecturer** | Maciej Wiesner |

| **Period** | **Activities and hours** | **Number of ECTS points** |
|---|---|---|
| Semester 2 | • Laboratories: 15, Graded credit | 2 |

## Goals

| Code | Goal |
|---|---|
| C1 | Familiarization with selected techniques for nanostructures' fabrication. |

## Subject learning outcomes

| Code | Outcomes in terms of | Learning outcomes | Examination methods |
|---|---|---|---|
| **Knowledge – Student:** | | | |

| Code | Outcomes in terms of | Learning outcomes | Examination methods |
|---|---|---|---|
| W1 | Will learn how to operate a scanning electron microscope and an e-beam lithography unit. | FEN_K2_W01 | Project |
| **Skills – Student:** | | | |
| U1 | Will learn the basics of an electron beam lithography technique. | FEN_K2_U01 | Project |

## Study content

| No. | Course content | Subject learning outcomes | Activities |
|---|---|---|---|
| 1. | Basics of the electron beam lithography. | W1, U1 | Laboratories |

## Additional information

| Activities | Teaching and learning methods and activities |
|---|---|
| Laboratories | Laboratory method |

| Activities | Credit conditions |
|---|---|
| Laboratories | Points P : P> 90% grade 5<br>80%<P<90% grade 4<br>60%<P<80% grade 3<br>P<60% grade 2 (failed) |

## Literature

**Obligatory**

1. Copies of necessary literature will be provided during meetings.

## Calculation of ECTS points

| Activities | Activity hours* |
|---|---|
| Laboratories | 15 |
| Preparation for classes | 10 |
| Preparation of a project | 30 |
| | |
| **Student workload** | **Hours**<br>55 |
| **Number of ECTS points** | **ECTS**<br>2 |

* academic hour = 45 minutes

## Efekty uczenia się dla kierunku

| Kod | Treść |
|---|---|
| FEN_K2_U01 | The graduate can use their knowledge to formulate and solve complex and unusual problems in the field of physical sciences; select and apply appropriate methods and tools necessary to solve a given problem (including advanced IT techniques), as well as adapt existing methods and tools or develop completely new ones |
| FEN_K2_W01 | The graduate knows and understands in-depth selected facts, phenomena, concepts and theories specific to physics and complex relationships between them (constituting advanced general knowledge in the field of physical sciences and representing both key and other selected issues in the field of advanced detailed knowledge in this discipline) |