

## Subject card

|                                             |                                                           |                                                          |                                         |                                     |                                                |            |     |
|---------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|------------------------------------------------|------------|-----|
| Subject name and code                       | Advanced Numerical Methods in Physics, PG_00154224        |                                                          |                                         |                                     |                                                |            |     |
| Field of study                              | Physics                                                   |                                                          |                                         |                                     |                                                |            |     |
| Date of commencement of studies             | October 2024                                              |                                                          | Academic year of realisation of subject |                                     | 2024/2025                                      |            |     |
| Education level                             | postgraduate studies                                      |                                                          | Subject group                           |                                     | Obligatory subject group in the field of study |            |     |
| Mode of study                               | full-time studies                                         |                                                          | Mode of delivery                        |                                     | at the university                              |            |     |
| Year of study                               | 1                                                         |                                                          | Language of instruction                 |                                     | Polish<br>not applicable                       |            |     |
| Semester of study                           | 1                                                         |                                                          | ECTS credits                            |                                     | 3.0                                            |            |     |
| Learning profile                            | academic                                                  |                                                          | Assessment form                         |                                     |                                                |            |     |
| Conducting unit                             | Faculty of Mathematics, Physics and Informatics -> Rektor |                                                          |                                         |                                     |                                                |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                        |                                                          | dr Marcin Łobejko                       |                                     |                                                |            |     |
|                                             | Teachers                                                  |                                                          | dr Marcin Łobejko                       |                                     |                                                |            |     |
| Lesson types                                | Lesson type                                               | Lecture                                                  | Tutorial                                | Laboratory                          | Project                                        | Seminar    | SUM |
|                                             | Number of study hours                                     | 15.0                                                     | 0.0                                     | 30.0                                | 0.0                                            | 0.0        | 45  |
|                                             | E-learning hours included: 0.0                            |                                                          |                                         |                                     |                                                |            |     |
| Learning activity and number of study hours | Learning activity                                         | Participation in didactic classes included in study plan |                                         | Participation in consultation hours |                                                | Self-study | SUM |
|                                             | Number of study hours                                     | 45                                                       |                                         | 0.0                                 |                                                | 45.0       | 90  |
| Subject objectives                          | not applicable                                            |                                                          |                                         |                                     |                                                |            |     |

|                                                                |                                                                                                                                                                                                                                  |                                  |                                                                                         |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------|
| Learning outcomes                                              | Course outcome                                                                                                                                                                                                                   | Subject outcome                  | Method of verification                                                                  |
|                                                                | [FIZMU2_W05] knows the theoretical foundations of computational methods and computer techniques used to model and simulate physical systems                                                                                      | not applicable                   | [SW1] oral statement/<br>conversation/discussion<br>[SW3] text preparation/written work |
|                                                                | [FIZMU2_W02] has in-depth knowledge of advanced mathematics and mathematical and computer methods, necessary to solve physical problems of intermediate complexity and advanced in a selected area of physics                    | not applicable                   | [SW1] oral statement/<br>conversation/discussion<br>[SW3] text preparation/written work |
|                                                                | [FIZMU2_W03] knows advanced experimental, observational and numerical techniques to plan and execute a complex physical experiment or computer simulation                                                                        | not applicable                   | [SW2] presentation/project/paper/<br>report<br>[SW5] implementation of a problem task   |
|                                                                | [FIZMU2_W04] knows the principle of operation of measuring systems and research apparatus specific to the area of physics related to the chosen specialization or knows advanced methods of theoretical and mathematical physics | not applicable                   | [SW1] oral statement/<br>conversation/discussion<br>[SW3] text preparation/written work |
|                                                                | [FIZMU2_U03] is able to make a critical analysis of the results of measurements, observations or theoretical calculations, together with an assessment of the accuracy of the results                                            | not applicable                   | [SU1] oral statement/conversation/<br>discussion<br>[SU3] text preparation/written work |
|                                                                | [FIZMU2_U07] is able to present the results of research (experimental, theoretical or numerical) in written, oral, multimedia presentation or poster form                                                                        | not applicable                   | [SU2] presentation/project/paper/<br>report<br>[SU5] implementation of a problem task   |
|                                                                | [FIZMU2_U05] has the ability to synthesize methods and ideas from different areas of physics and other sciences; is able to see that even distant phenomena are described by similar models                                      | not applicable                   | [SU2] presentation/project/paper/<br>report<br>[SU5] implementation of a problem task   |
| Subject contents                                               | not applicable                                                                                                                                                                                                                   |                                  |                                                                                         |
| Prerequisites and co-requisites                                |                                                                                                                                                                                                                                  |                                  |                                                                                         |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                         | Passing threshold                | Percentage of the final grade                                                           |
|                                                                | not applicable                                                                                                                                                                                                                   | 30.0%                            | 50.0%                                                                                   |
|                                                                | not applicable                                                                                                                                                                                                                   | 30.0%                            | 50.0%                                                                                   |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                 | not applicable                   |                                                                                         |
|                                                                | Supplementary literature                                                                                                                                                                                                         | not applicable                   |                                                                                         |
|                                                                | eResources addresses                                                                                                                                                                                                             | Adresy na platformie eNauczanie: |                                                                                         |
| Example issues/<br>example questions/<br>tasks being completed | not applicable                                                                                                                                                                                                                   |                                  |                                                                                         |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                   |                                  |                                                                                         |

Document generated electronically. Does not require a seal or signature.