

## Subject card

|                                             |                                                           |                                                          |                                             |                                     |         |                                                                          |     |
|---------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|---------------------------------------------|-------------------------------------|---------|--------------------------------------------------------------------------|-----|
| Subject name and code                       | Physics Lab I Mechanics, PG_00153885                      |                                                          |                                             |                                     |         |                                                                          |     |
| Field of study                              | Physics                                                   |                                                          |                                             |                                     |         |                                                                          |     |
| Date of commencement of studies             | October 2024                                              |                                                          | Academic year of realisation of subject     |                                     |         | 2024/2025                                                                |     |
| Education level                             | Bachelor's studies                                        |                                                          | Subject group                               |                                     |         | Obligatory subject group in the field of study<br>Optional subject group |     |
| 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                           | 2                                                         |                                                          | ECTS credits                                |                                     |         | 3.0                                                                      |     |
| Learning profile                            | academic                                                  |                                                          | Assessment form                             |                                     |         | credit                                                                   |     |
| Conducting unit                             | Faculty of Mathematics, Physics and Informatics -> Rector |                                                          |                                             |                                     |         |                                                                          |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                        |                                                          | dr Justyna Barzowska                        |                                     |         |                                                                          |     |
|                                             | Teachers                                                  |                                                          | dr Justyna Barzowska<br><br>dr Michał Mońka |                                     |         |                                                                          |     |
| Lesson types                                | Lesson type                                               | Lecture                                                  | Tutorial                                    | Laboratory                          | Project | Seminar                                                                  | SUM |
|                                             | Number of study hours                                     | 0.0                                                      | 0.0                                         | 45.0                                | 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                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------|
|                   | [FIZL3_U02] has the ability to perform measurements of basic physical quantities; can develop, describe and present the results of simple physical experiments and computer simulations; can perform quantitative analyses and formulate qualitative conclusions on this basis; can estimate measurement uncertainties | not applicable  | [SU1] oral statement/conversation/discussion<br>[SU2] presentation/project/paper/report |
|                   | [FIZL3_W12] knows the basics of numerical analysis, knows at a basic level at least one package for symbolic calculations, knows basic application software packages for presentation of results and data analysis; knows the basics of programming and software engineering                                           | not applicable  | [SW1] oral statement/conversation/discussion<br>[SW2] presentation/project/paper/report |
|                   | [FIZL3_W15] has a basic knowledge of the legal and ethical considerations involved in scientific and teaching activities                                                                                                                                                                                               | not applicable  | [SW1] oral statement/conversation/discussion<br>[SW2] presentation/project/paper/report |
|                   | [FIZL3_U03] can apply the formalism of classical physics to describe phenomena at the macroscopic level                                                                                                                                                                                                                | not applicable  | [SU1] oral statement/conversation/discussion<br>[SU2] presentation/project/paper/report |
|                   | [FIZL3_U07] has the ability to quantitatively analyze vibrational and wave motion and describe optical and acoustic phenomena and the interaction of light with matter                                                                                                                                                 | not applicable  | [SU1] oral statement/conversation/discussion<br>[SU2] presentation/project/paper/report |
|                   | [FIZL3_W01] has advanced knowledge of physical concepts, principles and theories, understands their historical development and significance not only for physics, but also for other exact and natural sciences and cognition of the world                                                                             | not applicable  | [SW1] oral statement/conversation/discussion<br>[SW2] presentation/project/paper/report |
|                   | [FIZL3_W13] knows basic measuring instruments, their construction and principle of operation, and applications of simple electronic circuits                                                                                                                                                                           | not applicable  | [SW1] oral statement/conversation/discussion<br>[SW2] presentation/project/paper/report |
|                   | [FIZL3_W02] understands the role of physical experiments, mathematical theoretical models approximating reality and computer simulations in the methodology of scientific research; is aware of technological, equipment and methodological limitations in scientific research                                         | not applicable  | [SW1] oral statement/conversation/discussion<br>[SW2] presentation/project/paper/report |
|                   | [FIZL3_U08] can use mathematical apparatus and numerical methods to describe and model physical phenomena and processes                                                                                                                                                                                                | not applicable  | [SU1] oral statement/conversation/discussion<br>[SU2] presentation/project/paper/report |
|                   | [FIZL3_K02] can precisely formulate problems to deepen understanding of a given topic                                                                                                                                                                                                                                  | not applicable  | [SK1] oral statement/conversation/discussion<br>[SK2] presentation/project/paper/report |
|                   | [FIZL3_U11] is able to use basic application software packages for presentation of results and data analysis                                                                                                                                                                                                           | not applicable  | [SU1] oral statement/conversation/discussion<br>[SU2] presentation/project/paper/report |

|                                 | Course outcome                                                                                                                                                                                                                                                                                                                 | Subject outcome | Method of verification                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------|
|                                 | [FIZL3_W03] knows how to plan and perform a simple physical experiment and analyze the results obtained; knows the elements of the theory of measurement uncertainty as applied to physical experiments, knows the basic units of the SI system and its most important derived units; knows other systems of measurement units | not applicable  | [SW1] oral statement/<br>conversation/discussion<br>[SW2] presentation/project/paper/<br>report |
|                                 | [FIZL3_K03] is aware of and understands the social aspects of the practical application of acquired knowledge and skills and the associated responsibility                                                                                                                                                                     | not applicable  | [SK1] oral statement/conversation/<br>discussion<br>[SK2] presentation/project/paper/<br>report |
|                                 | [FIZL3_W16] knows and understands the basic concepts and principles of industrial property protection and copyright law, and the principles of using patent information resources                                                                                                                                              | not applicable  | [SW1] oral statement/<br>conversation/discussion<br>[SW2] presentation/project/paper/<br>report |
|                                 | [FIZL3_K07] has a sense of responsibility for jointly implemented tasks; is able to interact and work in a group, assuming different roles in it                                                                                                                                                                               | not applicable  | [SK1] oral statement/conversation/<br>discussion<br>[SK2] presentation/project/paper/<br>report |
|                                 | [FIZL3_K06] is aware of professionalism and adherence to professional ethics                                                                                                                                                                                                                                                   | not applicable  | [SK1] oral statement/conversation/<br>discussion<br>[SK2] presentation/project/paper/<br>report |
|                                 | [FIZL3_K01] knows the limitations of his own knowledge and understands the need for further education                                                                                                                                                                                                                          | not applicable  | [SK1] oral statement/conversation/<br>discussion<br>[SK2] presentation/project/paper/<br>report |
|                                 | [FIZL3_W14] knows the basic principles of ergonomics and occupational health and safety                                                                                                                                                                                                                                        | not applicable  | [SW1] oral statement/<br>conversation/discussion<br>[SW2] presentation/project/paper/<br>report |
|                                 | [FIZL3_K08] is able to speak competently on basic problems of physics and its applications                                                                                                                                                                                                                                     | not applicable  | [SK1] oral statement/conversation/<br>discussion<br>[SK2] presentation/project/paper/<br>report |
|                                 | [FIZL3_U10] can independently search for information in Polish and English-language professional and popular science literature, as well as on the Internet                                                                                                                                                                    | not applicable  | [SU1] oral statement/conversation/<br>discussion<br>[SU2] presentation/project/paper/<br>report |
|                                 | [FIZL3_W08] has knowledge of the basic phenomena and laws of geometric optics, wave optics and photometry                                                                                                                                                                                                                      | not applicable  | [SW1] oral statement/<br>conversation/discussion<br>[SW2] presentation/project/paper/<br>report |
|                                 | [FIZL3_U15] is able to work in a team, plan and organize his own work and that of the team                                                                                                                                                                                                                                     | not applicable  | [SU1] oral statement/conversation/<br>discussion<br>[SU2] presentation/project/paper/<br>report |
|                                 | [FIZL3_U01] can formulate basic physical laws using mathematical formalism                                                                                                                                                                                                                                                     | not applicable  | [SU1] oral statement/conversation/<br>discussion<br>[SU2] presentation/project/paper/<br>report |
|                                 | [FIZL3_U16] can independently plan and implement his own learning                                                                                                                                                                                                                                                              | not applicable  | [SU1] oral statement/conversation/<br>discussion<br>[SU2] presentation/project/paper/<br>report |
|                                 | [FIZL3_U05] can describe electric and magnetic fields in vacuum and in material media, as well as physical phenomena occurring in electric circuits; can classify material media by the way they interact with an external electromagnetic field                                                                               | not applicable  | [SU1] oral statement/conversation/<br>discussion<br>[SU2] presentation/project/paper/<br>report |
| Subject contents                | not applicable                                                                                                                                                                                                                                                                                                                 |                 |                                                                                                 |
| Prerequisites and co-requisites |                                                                                                                                                                                                                                                                                                                                |                 |                                                                                                 |

|                                                                |                          |                   |                               |
|----------------------------------------------------------------|--------------------------|-------------------|-------------------------------|
| Assessment methods and criteria                                | Subject passing criteria | Passing threshold | Percentage of the final grade |
|                                                                | not applicable           | 51.0%             | 60.0%                         |
|                                                                | not applicable           | 51.0%             | 40.0%                         |
| Recommended reading                                            | Basic literature         | not applicable    |                               |
|                                                                | Supplementary literature | not applicable    |                               |
|                                                                | eResources addresses     |                   |                               |
| 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.