

## Subject card

|                                             |                                                                                               |                                                          |                                         |                                     |                                                |            |     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------|-------------------------------------|------------------------------------------------|------------|-----|
| Subject name and code                       | Introduction to informatics, PG_00155524                                                      |                                                          |                                         |                                     |                                                |            |     |
| Field of study                              | Bioinformatics                                                                                |                                                          |                                         |                                     |                                                |            |     |
| Date of commencement of studies             | October 2024                                                                                  |                                                          | Academic year of realisation of subject |                                     | 2024/2025                                      |            |     |
| Education level                             | undergraduate 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                                         |            |     |
| Semester of study                           | 1                                                                                             |                                                          | ECTS credits                            |                                     | 6.0                                            |            |     |
| Learning profile                            | academic                                                                                      |                                                          | Assessment form                         |                                     |                                                |            |     |
| Conducting unit                             | Instytut Fizyki Teoretycznej i Astrofizyki -> Faculty of Mathematics, Physics and Informatics |                                                          |                                         |                                     |                                                |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                            |                                                          | prof. dr hab. Marcin Wieśniak           |                                     |                                                |            |     |
|                                             | Teachers                                                                                      |                                                          | prof. dr hab. Marcin Wieśniak           |                                     |                                                |            |     |
| Lesson types                                | Lesson type                                                                                   | Lecture                                                  | Tutorial                                | Laboratory                          | Project                                        | Seminar    | SUM |
|                                             | Number of study hours                                                                         | 15.0                                                     | 0.0                                     | 45.0                                | 0.0                                            | 0.0        | 60  |
|                                             | 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                                                                         | 60                                                       |                                         | 0.0                                 |                                                | 90.0       | 150 |
| Subject objectives                          | Mastering working in the Linux terminal (bash shell)                                          |                                                          |                                         |                                     |                                                |            |     |
|                                             | Familiarization with the GIT version control system                                           |                                                          |                                         |                                     |                                                |            |     |
|                                             | Mastering the principles of object-oriented programming using the example of Python 3         |                                                          |                                         |                                     |                                                |            |     |

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| Learning outcomes                                              | Course outcome                                                                                                                                                                                                                                                                                                                                                                         | Subject outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Method of verification                       |
|                                                                | [BIOINL3_U01] Graduate is able to program using modern programming tools, including tools dedicated to bioinformatics                                                                                                                                                                                                                                                                  | Student knows how to navigate the tree of files and directories and manipulate them using Bash commands.<br>Student able to use pipelines and redirection of input and output operations to perform complex file operations and use AWK elements to filter data.<br>Is able to write a Python program containing conditional statements and loops<br>Is able to divide the program into useful functions and classes<br>Is able to work in a group using the GIT version control system | [SU2] presentation/project/paper/report      |
|                                                                | [BIOINL3_K04] Is aware of the importance of the principles of safety and ergonomics at work; applies the principles of safety at work; is responsible for the safety of himself and others; is able to act in situations of danger                                                                                                                                                     | Student is able to organize the workstation ergonomically                                                                                                                                                                                                                                                                                                                                                                                                                               | [SK1] oral statement/conversation/discussion |
|                                                                | [BIOINL3_K01] Graduate knows the limitations of his own knowledge and skills; he demonstrates a willingness to constantly improve, update his knowledge and enhance his qualifications in bioinformatics                                                                                                                                                                               | Is able to independently search documentation and independently improve his programming competences                                                                                                                                                                                                                                                                                                                                                                                     | [SK1] oral statement/conversation/discussion |
|                                                                | [BIOINL3_W01] Has knowledge of computer science technologies, with particular emphasis on programming                                                                                                                                                                                                                                                                                  | Student knows:<br><br>The role of the operating system.<br>Bash shell commands.<br>Elements of the AWK scripting language.<br>The role of version control systems.<br>Python 3 syntax.<br>Basic Python 3 data types and structures                                                                                                                                                                                                                                                      | [SW2] presentation/project/paper/report      |
| Subject contents                                               | Ergonomics of the workstation and occupational health and safety rules when working with a computer<br>The organization of the Linux system<br>Bash shell commands, command pipelines and input/output operations<br>GIT repository<br>Python 3 syntax<br>the basic data types in Python3 (e.g. int, float, complex, str)<br>Data structures (e.g. list, dict, tuple, etc.)<br>Objects |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |
| Prerequisites and co-requisites                                | brak                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                               | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Percentage of the final grade                |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                        | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 30.0%                                        |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                        | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 70.0%                                        |
| 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 |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |

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