GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Fundamentals of Informatics, PG_00060521 | | |
| Field of study | Naval Architecture and Offshore Structures | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2026/2027 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to scientific research 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 | 4.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Division of Applied Computer Science -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Marcin Życzkowski | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 0.0 | 30.0 | 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 | 5.0 | 50.0 | 100 |

**Subject objectives**

The aim of the course is to master the skills in the field of programming, problem-solving and algorithm creation, building block diagrams and using pseudocode and scripting language in the Python environment. Writing programs, creating functions and procedures. Using tables and variables of various types. Using functions that allow you to visualize test results in the Python.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U01] can obtain information from literature, databases and other sources, can verify and organize the obtained information, interpret them and form conclusions and justified opinions | The student can independently find information to solve tasks and tests in the field of learning about programming, creating and building simple programs in the PYTHON environment. | [SU3] Assessment of ability to use knowledge gained from the subject<br>[SU1] Assessment of task fulfilment<br>[SU4] Assessment of ability to use methods and tools |
| [K6_W04] has knowledge in the field of computer science, electronics, electrical engineering, automation and control, information technology, computer graphics, useful for understanding the possibilities of their use in ocean engineering | The student can independently develop a solution using a block diagram and scripting language in the PYTHON environment | [SW3] Assessment of knowledge contained in written work and projects<br>[SW1] Assessment of factual knowledge |

<table>
<tr><td>Subject contents</td><td>Course content – lecture<br><br>Range:<br><br>• Getting acquainted with the Anaconda development environment,<br>• Familiarization with Spyder (selected IDE), importing and using Python libraries,<br>• Getting to know the basics of the Python language.<br><br>Python basics:<br><br>• Functions (creation, use)<br>• familiarization with operators (arithmetic, logical, relational),<br>• Retrieving and formatting data entered by the user,<br>• operations on strings (cutting strings, separating strings, joining strings, capitalization, finding patterns in the text, replacing the pattern, removing spaces, new line and tabulation, special characters in the text),<br>• Conditional statements (if, else, elif),<br>• getting acquainted with new data structures (lists, sets, tuples, dictionaries),<br>• familiarization with generating expressions (lists, dictionaries, sets),<br>• Using loops (for, while),<br>• File handling (loading, reading), data transfer format (TXT, CSV, JSON)<br>• Generating random events (random),<br>• Getting to know the NumPy library. ndarray - basic data type, creating arrays with np.array(), np.arange(), np.linspace(), array operations, viewing arrays in NumPy, generating pseudo-random numbers (eg random), Indexing and cutting arrays , Iteration over arrays, resizing, statistical functions in the NumPy library<br>• Getting to know matplotlib and seaborn, bar and scatter plots, displaying images, subplots and other data visualization possibilities</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>umiejętność rozwiązywań problemów. algorytmy</td><td>60.0%</td><td>100.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. Programming for Everybody (Getting Started with Python)<br>2. https://www.flynerd.pl/tag/python-kurs<br>3. https://www.tutorialspoint.com/python/<br>4. Python.org<br>5. https://python.swaroopch.com/</td></tr>
<tr><td>Supplementary literature</td><td>Computing in Python I: Fundamentals and Procedural Programming</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Function construction. Input and output parameters. Application of functions and algorithms. Searching for vector and matrix elements that meet given conditions, sorting, checking if a given number is a prime number, compute greatest common divisor, calculating factorials, recursion.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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