GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Data Analysis and Presentation, PG_00062664 | | |
| Field of study | Naval Architecture and Offshore Structures | | |
| Date of commencement of studies | February 2024 | Academic year of realisation of subject | 2023/2024 |
| Education level | second-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 | 6.0 |
| Learning profile | general academic profile | Assessment form | exam |
| Conducting unit | Division of Applied Computer Science -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Marcin Życzkowski | |
| | Teachers | | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 30.0 | 0.0 | 0.0 | 45.0 | 0.0 | 75 |
| 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 | 75 | 15.0 | 60.0 | 150 |

**Subject objectives**

The student became familiar with IT tools that will allow him to visualize data in a clear and attractive way for the recipient.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K7_U04] Prepares professional presentations of analysis outcomes persuasively, providing them with profound interpretations to clearly convey their significance | The student is able to present professional mathematical and statistical analyzes in an attractive and clear way using IT tools, including the Numpy, Pandas, Seaborn libraries in Python. | [SU5] Assessment of ability to present the results of task<br>[SU1] Assessment of task fulfilment<br>[SU4] Assessment of ability to use methods and tools |
| [K7_U01] Develops innovative strategies to solve complex and dynamic problems by synthesizing information from various sources and utilizing analytical, simulation, and experimental methods, considering environmental variability | The student is able to use external sources and present, analyse and visualize the problem in an understandable, attractive and legible way. | [SU4] Assessment of ability to use methods and tools<br>[SU2] Assessment of ability to analyse information<br>[SU5] Assessment of ability to present the results of task |
| [K7_W04] Conducts thorough analysis of complex problems, based on credible data and appropriately chosen methods, striving to achieve logical solutions | The student uses specialized mathematical and statistical operations so that the problem described by external data (files) can be recognized. | [SW3] Assessment of knowledge contained in written work and projects<br>[SW2] Assessment of knowledge contained in presentation |

<table>
<tr><td>Subject contents</td><td>Getting to know the basics of the python language:<br><br>functions (creation, use), familiarization with operators (arithmetic, logical, relational), Retrieving and formatting data entered by the user, operations on strings (cutting strings, separating strings, combining strings, case of letters, finding patterns in text, pattern replacement , removing spaces, new line and tab, special characters in the text), how to create conditions using conditional statements (if, else, elif), learning about new data structures (lists, sets, tuples, dictionaries), learning about expressions generating (lists, dictionaries, sets), how loops work (for, while), file handling (loading, reading), random events (random), how to handle the data sending format (TXT, CSV, JSON)<br><br>The student will become familiar with the Pandas, Seaborn, Numpy, and Matplotlib libraries.<br><br>Pandas is a library that makes it easy to load, transform, explore, and analyze tabular data such as spreadsheets or databases.<br><br>The student will learn the basic structures from this library: Series, DataFrame.<br><br>The student will be able to load and save data from various sources, such as CSV files, Excel, SQL, JSON and many others. You can also save data to these formats. He will be able to select and index data. It will perform operations on the data such as filtering, sorting, grouping, combining and many others.<br><br>The student will also learn the Seaborn and Matplotlib libraries and will make various types of plots, including scatter plots, histograms, heat maps, boxplots and others.<br><br>The student will also learn about the Numpy library.<br><br>It will also use various types of statistical functions and mathematical operations.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>The student knows the basics of Python programming</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></td><td>50.0%</td><td>80.0%</td></tr>
<tr><td></td><td>50.0%</td><td>20.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>https://pandas.pydata.org/<br><br>https://seaborn.pydata.org/<br><br>https://numpy.org/<br><br>https://matplotlib.org/</td></tr>
<tr><td>Supplementary literature</td><td>https://pandas.pydata.org/<br><br>https://seaborn.pydata.org/<br><br>https://numpy.org/<br><br>https://matplotlib.org/</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>What is DataFrame in Pandas library.<br><br>Can Series data be converted to a list data structure?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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