GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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| Subject name and code | Visualization and Multimedia in Technology, PG_00038327 | | |
| Field of study | Automation, Robotics and Control Systems | | |
| Date of commencement of studies | October 2022 | Academic year of realisation of subject | 2023/2024 |
| Education level | second-cycle studies | Subject group | Optional subject group<br>Subject group related to scientific research in the field of study |
| Mode of study | Part-time studies | Mode of delivery | at the university |
| Year of study | 2 | Language of instruction | Polish |
| Semester of study | 3 | ECTS credits | 2.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Metrology and Information Systems -> Faculty of Electrical and Control Engineering | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Anna Golijanek-Jędrzejczyk | |
| | Teachers | dr inż. Anna Golijanek-Jędrzejczyk | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 10.0 | 0.0 | 10.0 | 0.0 | 0.0 | 20 |

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 | 20 | 4.0 | 26.0 | 50 |

**Subject objectives**

The aim of the course is to prepare students to work on designing ergonomic interaction systems for automation devices.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| K7_K02 | The student is able to work in a group. | [SK3] Assessment of ability to organize work<br>[SK1] Assessment of group work skills<br>[SK2] Assessment of progress of work<br>[SK4] Assessment of communication skills, including language correctness |
| K7_W04 | Based on the acquired knowledge, the student is able to solve complex optimization problems. | [SW1] Assessment of factual knowledge<br>[SW3] Assessment of knowledge contained in written work and projects<br>[SW2] Assessment of knowledge contained in presentation |
| K7_U02 | The student defines and classifies visualization systems. The student is able to choose the graphic form to the presented data. The student is able to plan and design an ergonomic user interface | [SU2] Assessment of ability to analyse information<br>[SU1] Assessment of task fulfilment<br>[SU3] Assessment of ability to use knowledge gained from the subject |

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| Subject contents | **Lectures** Information theory. Historically ways of transmitting information. Definition of visualization. Visualization tasks. The use of visualization. Infovis definition, history, development and tasks of this discipline. Visual perception. Rules for selecting colors in visualization. Information visualization methods. .Examples of well-prepared visualizations. Examples of poorly prepared data visualizations. Principles of designing good visualization. Data mining techniques. Principles of visualization design. Rules for preparing technical documentation. Visualization testing. Infographics definition, history and development. Methods of presenting symbolic data. Pictograms. Multimedia technics. Multimedia possibilities. The use of multimedia in visualization.<br>**Laboratory** Preparing two visualization projects in a group for the system given by the teacher. The first project will concern the visualization of measurement data from the experiment along with a short report. The second project is the preparation of visualization for the indicated system and a multimedia presentation for the prepared project (considering the use of multimedia techniques in the project). |
| Prerequisites and co-requisites | |

Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Practical exercise during labs | 60.0% | 100.0% |

Recommended reading

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| Basic literature | 1. Osińska V.: Wizualizacja informacji. Studium Informatologiczne.WNUMK, Toruń 2016.<br>2. Claus O. Wilke: Podstawy wizualizacji danych. Zasady tworzenia atrakcyjnych wykresów. Helion, 2020.<br>3. S. Berinato: Good Charts: The HBR Guide to Making Smarter, More Persuasive Data Visualizations. Harvard Business Review Press, 2016., ISBN-10: 1633690709.<br>4. A. Kirk: Data Visualisation. A Handbook for Data Driven Design.Sage Publications Ltd., 2016. ISBN: 9781473912137<br>5. Cooper A.: Wariaci rządzą domem wariatów. Dlaczego produkty wysokich technologii doprowadzają nas do szaleństwa i co zrobić, żeby tego uniknąć. 2004.<br>6. Jacek Matulewski, Tomasz Dziubak, Marcin Sylwestrzak, Radosław Płoszajczak: Grafika. Fizyka. Metody numeryczne. Symulacje fizyczne z wizualizacją 3D. Wydawnictwo Naukowe PWN 2010.<br>7. Srinivasan Desikan; Gopalaswamy Ramesh: Software Testing: Principles and Practices. Pearson Education India 2006<br>8. Bogdan Wiszniewski, Bogdan Bereza-Jarociński: Teoria i praktyka testowania programów. PWN 2009<br>9. Garr Reynolds: Zen prezentacji. proste pomysły i ważne zasady. Helion 2009<br>10. T. Morzy: Eksploracja danych. Metody i algorytmy. Warszawa, 1, 2021. ISBN: 9788301171759 |
| Supplementary literature | 1. Bednarek J., Multimedia w kształceniu. PWN, Warszawa 2006.<br>2. Paul Beynon-Davies: Inżynieria systemów informacyjnych. WNT W-wa 2004. |
| eResources addresses | Adresy na platformie eNauczanie:<br>WIZUALIZACJA I MULTIMEDIA W TECHNICE [Niestacjonarne] [2023/24] - Moodle ID: 32275<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32275 |

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| Example issues/ example questions/ tasks being completed | 1. Definition of visualization.<br>2. Classification and characteristics of visualization.<br>3. Data and methods of symbolic presentation.<br>4. Steps in designing visualization systems.<br>5. Rules for the drafting of technical documentation. |
| Work placement | Not applicable |