GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Hydraulics and Pneumatics, PG_00060560 | | |
| Field of study | Naval Architecture and Offshore Structures | | |
| Date of commencement of studies | October 2023 | Academic year of realisation of subject | 2024/2025 |
| Education level | first-cycle studies | Subject group | Optional subject group<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 | 2 | Language of instruction | Polish |
| Semester of study | 4 | ECTS credits | 5.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Daniel Piątek | |
| | Teachers | | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 30.0 | 15.0 | 15.0 | 0.0 | 0.0 | 60 |

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=9694

**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 | 6.0 | 59.0 | 125 |

**Subject objectives**

Learning the principles and functioning of fluid drives of machines, widely used in the drive and control of ship and ocean engineering equipment

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems | the student knows the principles of operation of marine fluid drives: pneumatic and hydraulic | [SW3] Assessment of knowledge contained in written work and projects<br>[SW1] Assessment of factual knowledge |
| [K6_U03] can use computer-aided design, production and operation tools for ocean technology objects and systems | The student uses typical engineering software: spreadsheets, CAD systems, etc. to design drive systems | [SU1] Assessment of task fulfilment<br>[SU4] Assessment of ability to use methods and tools |
| [K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems | The student is able to perform calculations of typical drive systems and select their components | [SU1] Assessment of task fulfilment<br>[SU3] Assessment of ability to use knowledge gained from the subject |

**Subject contents**

Basic properties of fluid drive and control, rotating and displacement machines; working fluids; viscous fluid flows; drive and control elements; hydrostatic transmission; classification and graphic symbols of hydraulic system elements; pressure and flow rate control valves; hydraulic pumps and motors used in hydrostatic drives; throttling control of hydraulic motor speed in individual and group systems.

**Prerequisites and co-requisites**

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| laboratory - report | 60.0% | 25.0% |
| lecture - test | 60.0% | 50.0% |
| exercises - test | 60.0% | 25.0% |

| | | |
|---|---|---|
| Recommended reading | Basic literature | 1. Stryczek St.: Napęd hydrostatyczny, tom I Elementy, WNT W - wa. 2003<br><br>2. Stryczek St.: Napęd hydrostatyczny, tom II Układy, WNT W - wa. 2003<br><br>3. Szejnach, W: Napęd i sterowanie pneumatyczne. PWN, W-wa, 2022<br><br>4. Szydelski Zb.: Napęd i sterowanie hydrauliczne, WKŁ WNT W - wa. 1999 |
| | Supplementary literature | 1. Pizoń A.: Elektrohydrauliczne analogowe i cyfrowe układy automatyki, WNT WNT W - wa. 1995<br><br>2. Garbacik A.: Studium projektowania układów hydraulicznych, Ossolineum, Wrocław, W - wa. Kraków, 1997<br><br>3. Palczak E.: Dynamika elementów i układów hydraulicznych, Ossolineum, Wrocław, W - wa. Kraków, 1997<br><br>4. Paszota Z.: Aspects énergétiques des transmissions hydrostatiques, W.P.G. Gdańsk 2002. |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |