



Subject card

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|---|---|--|-------------------------------------|------------|---|---------|-----|
| Subject name and code | Hydraulics and Pneumatics, PG_00055392 | | | | | | |
| Field of study | Mechanical Engineering | | | | | | |
| Date of commencement of studies | October 2022 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study 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 | | | 3.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| Conducting unit | Department of Mechanics and Mechatronics -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Paweł Śliwiński | | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 15.0 | 0.0 | 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 | 3.0 | | 27.0 | | 75 |
| Subject objectives | Knowledge of physical phenomena, principles of design and operation of hydraulic and pneumatic drive and control systems | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle | | | | [SW1] Assessment of factual knowledge | | |
| | [K6_U07] is able to design a typical construction of a mechanical device, component or a testing station using appropriate methods and tools, adhering to the set usage criteria | | | | [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment | | |
| Subject contents | LECTURE: Structure of hydraulic and pneumatic drive and control. Properties of hydraulic fluids and air. Pressure losses and their calculation. Flow through clearances. Basic elements of hydraulic and pneumatic systems: pumps, motors, cylinders, valves, filters, compressed air units. Basic calculations of hydraulic and pneumatic drive systems. LABORATORY: Practical knowledge of structure and operation of hydraulic and pneumatic components. Assembly of basic units. | | | | | | |
| Prerequisites and co-requisites | Physics | | | | | | |

| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
|--|--------------------------|--|-------------------------------|
| | test after lecture | 56.0% | 66.0% |
| | laboratory | 56.0% | 34.0% |
| Recommended reading | Basic literature | 1. Osiecki A.: Hydrostatyczny napęd maszyn. WNT, Warszawa 1998 2. Szejnach W.: Napęd i sterowanie pneumatyczne. WNT, Warszawa 1997 3. Balawender A. et al: Laboratorium napędów hydraulicznych. Część 1. Podstawy hydrauliki. Gdańsk 1996 4. Niegoda J., Pomierski W.: Sterowanie pneumatyczne. Ćwiczenia laboratoryjne. Skrypt PG, Gdańsk 1998 | |
| | Supplementary literature | 1. Dindorf R.: Napędy płynowe. Podstawy teoretyczne i metody obliczania napędów hydraulicznych i pneumatycznych. Wydawnictwo Politechniki Świętokrzyskiej. Kielce 2009 | |
| | eResources addresses | | |
| Example issues/ example questions/ tasks being completed | | | |
| Work placement | Not applicable | | |