



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Designing of fluid devices

Course

Field of study

Mechatronics

Area of study (specialization)

Mechatrical Design

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1 / 2

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

Tutorials

Projects/seminars

15

Other (e.g. online)

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Mechanicznej

ul. Piotrowo 3, 60-965 Poznań

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Responsible for the course/lecturer:

Prerequisites

Student learned the basics of knowledge in the field of technology, fluid drives, automation and control systems

Course objective

Transfer of knowledge on the design of proportional solenoid valves and propulsion systems with these valves as well as power supply and control systems, to the extent specified by the curriculum content appropriate to the field of study.

Course-related learning outcomes

Knowledge



The student should design and select elements of the drive system based on hydraulic and pneumatic elements. Should design or select elements of the power supply system for the hydraulic drive. The student should choose the elements of the control system in electrohydraulics and electropneumatics.

Skills

The student is able to design or select simple mechanical constructions, fluid systems, control and measuring systems in the field of the subject. Is able to perform numerical simulations of physical phenomena and technical processes using standard software.

Social competences

The student understands the need for lifelong learning; can inspire and organize the learning process of others. Is aware of the role of automation in modern economy and its importance for society and the environment. Is able to set priorities for the implementation of a specific task.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit based on a written exam consisting of 3-4 general questions in the subject (<50% - ndst, 50-60%: dst 60-70% -dst +, 70-80: db, 80-90: db +, > 90% - very good)

Project: Assessment based on the evaluation of the implementation of the project topic tasks set for a group of students and assessment of the involvement of individuals in the implementation of part of the project.

Programme content

Discussion of the principles of designing servo and proportional valves, including pneumatic valves. Discussion of issues related to experimental testing of valves. Selection of hydraulic power supply components, control and measurement circuit elements in proportional technique. Operating issues in hydraulics, selection of cooling systems, filters and other equipment.

Project:

Preparation of project documentation in the field of subject matter. Development of diagrams of hydraulic or pneumatic systems, with elements of proportional technique. Development of a simulation model of the designed system. Selection of components for the implementation of individual tasks in the project.

Teaching methods

Lectures, supported by transparencies and multimedia presentations

Project: Topics implemented in groups in teaching positions

Bibliography

Basic

1. Napęd hydrostatyczny, Stryczek S., WNT, 2005



2. Napęd i sterowanie pneumatyczne, Szenajch w., WNT, 2005

Additional

1. Vademecum hydrauliki, tom 2, Mannesmann Rexroth GmbH, 1989

2. Filtrowanie cieczy roboczych w urządzeniach hydraulicznych, Praca zbiorowa, Internormen filter, 1991

3. Materiały uzupełniające producentów komponentów elektorhydrauliki i elektropneumatyki

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2
Classes requiring direct contact with the teacher	30	1
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	20	1

¹ delete or add other activities as appropriate