COURSE DESCRIPTION CARD - SYLLABUS

Course name
Design of pneumatic systems

Course

Field of study
Construction and Exploitation of Means of Transport

Year/Semester
1/2

Area of study (specialization)
Food Industry Machines and Refrigeration

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other (e.g. online)

Tutorials
0

Projects/seminars
0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
dr inż. Damian Frąckowiak

Responsible for the course/lecturer:

Prerequisites

Knowledge: Has knowledge of the basics of machine design, fluid mechanics and quantity measurementsmechanical.

Skills: Can perform measurements of basic mechanical quantities and the range fluid mechanics, analyze the results and draw conclusions.

Social competences: Understanding the need to expand one's competences, readiness to cooperation as part of the team.

Course objective

Getting to know the construction and principles of operation of pneumatic elements. Acquainting with the basic systems drive and control systems and the basics of their design. Knowing a specialist software for designing and analyzing pneumatic and electropneumatic systems.

Course-related learning outcomes

Knowledge

1. Knows the structure and principles of operation of pneumatic elements. Has basic knowledge

pneumatic and electropneumatic drive and control systems. He knows the application pneumatics with particular emphasis on machines and devices in the food industry. Has basic knowledge of designing pneumatic systems.

2. Knows specialized computer software supporting the design process pneumatic systems.

Skills

1. Can select elements, design and build a simple pneumatic system and electropneumatic. Can use specialized software in the design process.

2. Can examine and determine the characteristics of the basic pneumatic elements

Social competences

1. Is aware of the importance of acting in a professional manner. He understands the need for a lifetime training.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam. Current control of preparation for laboratory exercises and evaluation of the developed ones project tasks.

Programme content

General information about pneumatic drives. The use of pneumatic systems, with particular emphasis on food industry machinery and equipment. Drive structure pneumatic. Compressed air preparation installation and units. Construction and principles of operation pneumatic components and devices. Parameters and characteristics of pneumatic drives. Basic pneumatic systems. Pneumatic and electropneumatic control. methodology design of pneumatic systems. Computer aided design with the use of software for the construction, simulation and analysis of pneumatic systems.

Teaching methods

1. Lecture with multimedia presentation

2. Practical method - in the form of auditorium exercises at computer stations

Bibliography

Basic

1. Szenajch W.: Napęd i sterowanie pneumatyczne?. WNT, Warszawa 2003.

2. Tomasiak E.: Napędy i sterowania hydrauliczne i pneumatyczne. Wyd. Politechniki Śląskiej, Gliwice 2001.

3. Pr. zb. pod red. J. Świdra: Sterowanie i automatyzacja procesów technologicznych i układów mechatronicznych. Wyd. Politechniki Śląskiej, Gliwice 2002.

4. Świder J., Wszołek G.: Metodyczny zbiór zadań laboratoryjnych i projektowych ze sterowania procesami technologicznymi, Wydawnictwo Politechniki Śląskiej, Gliwice, 2003.

Additional

1. Gerc E. W.: Napędy pneumatyczne Teoria i obliczanie, WNT, 1975.

2. Instrukcje obsługi sterowników programowalnych PLC oraz oprogramowania inżynierskiego do projektowania układów pneumatycznych, normy, katalogi itp.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1,0

[1] delete or add other activities as appropriate