COURSE DESCRIPTION CARD - SYLLABUS

Course name

Refrigeration basics

Course

Field of study

Construction and Exploitation of Means of Transport

Year/Semester

3/6

Area of study (specialization)

Food Industry Machines and Refrigeration

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

30

Laboratory classes

30

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

prof. dr hab. inż. Krzysztof Bieńczak

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tel. 616475888

Faculty of Civil and Transport Engineering

Responsible for the course/lecturer:

Prerequisites

KNOWLEDGE: Has a general knowledge about the impact of technical facilities and technologies on the environment.

SKILLS: Is able to define categories of threats posed to the environment by a specific technological pocesses in the area of food machines and devices refrigerants production and operation. Is able to indicate ways of counteracting these threats.

SOCIAL COMPETENCES: Work in an interdisciplinary team. Ability to lead a team and expanding team knowledge.

Course objective

Student knows the theoretical and practical problems related to the construction and operation of refrigeration facilities.

Course-related learning outcomes

Knowledge

1. Has extended basic knowledge necessary to understand specialist subjects and specialist knowledge of construction, manufacturing and operation methods of a selected working, transport, thermal and flow machines (covered by the profile specialization of the Faculty of Civil and Transport Engineering).

2. Has a basic knowledge of the life cycle of machines, as well as machine elements and construction and operational materials recycling.

Skills

1. Is able to obtain information from literature, the Internet, databases and other sources. Is able to integrate and interpret the obtained information and draw conclusions, as well as create and justify opinions.

2. Has the ability to self-educate with the use of modern didactic tools such as remote lectures, Internet websites and databases, teaching programs, e-books.

Social competences

1. Is ready to critically assess the knowledge and content received.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written tests

Programme content

Classification and operating principle of refrigeration equipment. Linde cycles (wet and dry). Circulation with subcooling. Circuit with regeneration. Parameters characterizing single-stage devices refrigeration. Multistage cycles. Losses in compressor refrigeration equipment, refrigerants. Coolants. Lubricating oils. Classification of compressors. Construction of piston, screw and scroll compressors. Capacity control. Lubrication. Types of dangers and compressor safety devices. Factors affecting compressor capacity. Condensers (classification, construction, operation). Evaporators (classification, construction, operation). Regulators (classification, construction, operation).

Teaching methods

Lecture with presentation, experimental classes

Bibliography

Basic

1. Czapp M., Charun H., Bohdal T. Wielostopniowe urządzenia chłodnicze WSI Koszalin 1994

2. Bonca Z. Automatyka chłodnicza i klimatyzacyjna. Wyd. WSM Gdynia 1995

3. Postolski J., Gruda Z. Zamrażanie żywności. PWN 2001

Additional

1. B. Guziński, Chłodnictwo dla praktyków, Systherm Serwis, Poznań 2013

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,0
Classes requiring direct contact with the teacher	60	2,0
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