COURSE DESCRIPTION CARD - SYLLABUS

Course name
Refrigeration in storage and transport

Course

Field of study
Transport

Year/Semester
1/1

Area of study (specialization)
Refrigerated transportation

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
18

Laboratory classes
18

Other (e.g. online)
0

Tutorials
9

Projects/seminars
0

Number of credit points

5

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Krzysztof Bieńczak prof.PP

Faculty of Civil and Transport Engineering

Responsible for the course/lecturer:

Prerequisites

Knowledge: The student has a general knowledge of the impact of technical facilities and technologies on the environment.

Skills: The student is able to define the categories of threats that constitute a specific technological process for the environment in the field of production and operation of food machinery and cooling devices, and indicate ways of counteracting these threats.

Social competences: Working in an interdisciplinary team. Ability to lead a team and expand team knowledge.

Course objective

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

Course-related learning outcomes

Knowledge

Student has knowledge of development trends and the most important new achievements of means of transport and other selected related scientific disciplines,

Student knows the economic, legal and other conditions of the activities of transport companies.

Skills

Student is able to obtain information from literature, databases and other sources (in Polish and English), integrate them, interpret and critically evaluate them, draw conclusions and formulate and exhaustively justify opinions.

Student is able to make a critical analysis of existing technical solutions and propose improvements (improvements).

Social competences

Student understands that in the field of transport engineering, knowledge and skills very quickly become obsolete.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified on the basis of a written exam in the form of a test. Skills acquired during the classes are verified on the basis of a final test in the form of a written test and obligatory individual reports on laboratory classes.

Programme content

Cooling systems used in large storage and freezing facilities. Refrigeration in sea ports and on ships (coolers, hunting ships). Car refrigeration units. Transcritical systems in transport refrigeration. Hybrid aggregates. Methods of preparing fruit and vegetables for transport. Food storage and transport conditions (meat, fish, dairy products, fruit and vegetables). Condensers (classification, construction, operation). Evaporators (classification, construction, operation). regulators (classification, principle of operation, construction, operation).

Teaching methods

Information and problematic lecture with a multimedia presentation. Exercises - solving problems, laboratory (experiment) method.

Bibliography

Basic

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

2. S. Kwaśniowski, Pojazdy chłodnicze i izotermiczne, Nawigator, Wrocław 1997

Additional

1. B. Gaziński Klimatyzacja pojazdów samochodowych, Systherm Serwis, Poznań 2016

Breakdown of average student's workload

	Hours	ECTS
Total workload	95	5,0
Classes requiring direct contact with the teacher	45	2,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	50	2,5

[1] delete or add other activities as appropriate