POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Use of refrigeration bodies [N1Trans1>UNCh]

Course

Field of study	Year/Semester
Transport	4/7
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
part-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
9	18	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

4,00

Coordinators

dr hab. inż. Arkadiusz Stachowiak prof. PP
arkadiusz.stachowiak@put.poznan.pl

Lecturers

Prerequisites

KNOWLEDGE: has a basic knowledge of the conditions of storage (storage) of food and the elements of the cold supply chain SKILLS: is able to identify the impacts of food in the process of refrigerated transport SOCIAL COMPETENCES: is aware of the responsibility for their work

Course objective

Developing the skills of proper organization of the food transport process in controlled temperature conditions. The use of numerical simulation methods to forecast cargo temperature changes during transport.

Course-related learning outcomes

Knowledge:
1. The student has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems.
2. The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport.

Skills:
1. The student is able to properly plan and conduct perform experiments, including measurements and computer simulations, interpret the obtained results, and correctly draw conclusions.
2. Student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods.
3. The student has the ability to formulate tasks in the field of transport engineering and their implementation using at least one of the popular tools.

Social competences:
1. The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Ongoing monitoring of preparation (discussion) and activity in the classroom. Compulsory report on each laboratory activity.

Programme content

General design characteristics of means of transport intended for transporting food in controlled temperature conditions. The required parameters of the cargo space microclimate in the transport of selected products (e.g. fish, meat, dairy products, flowers). Basics of modeling the temperature distribution in a refrigerated body. Basics of simulating temperature changes in the means of transport and cargo during transport. Temperature mapping in refrigerated bodies (idea, technical implementation). Principles of good transport practice in the transport of food. Main causes of damage to the cargo during transport in refrigerated bodies (case studies from transport practice).

Course topics

Teaching methods

1. Lecture with multimedia presentation
2. Laboratory exercises - solving problems

Bibliography

Basic
1. Bieńczak K., Modelowanie warunków termicznych chłodniczego przewozu żywności. Wydawnictwo Politechniki Poznańskiej, Poznań, 2009.
2. Zwierzycki W., Bieńczak K. [red.] Pojazdy chłodnicze w transporcie żywności, Systherm Serwis, Poznań 2006.
Additional
1. Wiśniewska M., Malinowska E., Zarządzanie jakością żywności. Systemy, koncepcje, instrumenty Wyd. Difin, Warszawa 2011

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,00
Classes requiring direct contact with the teacher	27	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	63	3,00