POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Design of refrigeration bodies [S1Trans1>PNCh]

Course

Field of study
Transport

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

dr hab. inż. Przemysław Tyczewski
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Lecturers

Prerequisites

KNOWLEDGE: has basic knowledge of cargo science and the basics of bodybuilding; knows the basics of technical drawing and the use of AutoCAD. SKILLS: can perform basic construction calculations, drawing documentation with the use of AutoCAD; knows how to develop a computer program on the basis of a given computational algorithm SOCIAL COMPETENCES: is aware of acting in a professional manner; understands the need for continuous training

Course objective

Getting to know the theoretical and practical problems related to the design and execution of refrigeration plants Means of transport of food. The use of computer tools for the design of refrigerated bodies.

Course-related learning outcomes

Knowledge:
1. The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport.
2. The student knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of an engineering nature engineering.

Skills:
1. The student is able to design elements of means of transport using data on environmental protection.
2. The student is able to design elements in the field of transport engineering and construct simple machines.
3. The student is able to design means of transport with appropriate external requirements (e.g. regarding environmental protection).

Social competences:
1. The student understands that in technology, knowledge and skills very quickly become obsolete

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 laboratory report.

Programme content

Food as cargo (loading and transport susceptibility). Agreement on the international transport of perishable foodstuffs and the means of transporting them. Isothermal bodies (thermal insulation materials, production of structural elements, assembly technology). Additional equipment (movable floor, spreader bars). Loading platforms. Certification tests of isothermal bodies. Procedures for diagnosing the condition of isothermal bodies. Preparation of means of transport for loading. Characteristics of design solutions of refrigerated bodies for food transport. Estimating the dimensions of the body, insulation thickness. Strength analysis of selected body elements: bottom binding frame, aggregate mounting, side and rear door frames. Using AutoCAD for visualization in the body design process. Determination of axle loads for vehicles with oversized bodies - calculation algorithm. Estimation of the cooling capacity demand for food transport bodies (DIN8959 standard, calculation algorithm). Characteristics of chillers used in food transport - selection rules, assembly methods.

Course topics

Food as cargo. Agreement on international transport of perishable
food products and means of transporting them. Chassis isothermal. Additional equipment. Certification tests of isothermal bodies. Body condition diagnosis
procedures isothermal. Preparation of the means of transport for loading. Characteristics of solutions structural refrigerated bodies for the transport of food. Estimation of the body dimensions, insulation thickness. Strength analysis of selected body elements: bottom binding frame, mounting of the aggregate, side and rear door frames. Use of AutoCAD for the process exterior design. Determination of axle loads for vehicles with bodies oversized - calculation algorithm. Estimate the cooling capacity demand for food transport bodies. Characteristic chillers used
in food transport - selection principles, methods assembly.

Teaching methods

1. Lecture with multimedia presentation
2. Laboratory exercises - solving project tasks

Bibliography

Basic
1. Zwierzycki W., Bieńczak K. [red.] Pojazdy chłodnicze w transporcie żywności, Systherm Serwis, Poznań 2006.
2. Kwaśniowski S.[red.] Pojazdy izotermiczne i chłodnicze, Navigator nr 7, Wrocław 1997.
3. Pikoń A., AutoCAD 2007 PL. Helion, Warszawa 2007.
Additional
1. Bieńczak K., Modelowanie warunków termicznych chłodniczego przewozu żywności. Wydawnictwo Politechniki Poznańskiej, Poznań, 2009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	2,00