



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Transport and warehousing of dangerous goods

Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Special-purpose vehicles

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

polish

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

Faculty of Civil Engineering and Transport

Prerequisites

Knowledge:

The student knows the basics of physics and chemistry as well as the basics of thermodynamics and fluid mechanics and environmental protection.

Skills:

Strict use of terminology terms in the field of mechanics, thermodynamics, physics and chemistry. Correct description of the observed phenomena, analysis of the obtained results and drawing conclusions.

Social competences:



The student is able to think and act in an entrepreneurial manner. Can work in an interdisciplinary team. Has the ability to lead a team and expand team knowledge.

Course objective

The aim of the course is to familiarize students with the most important issues related to the transport and storage of dangerous goods. In particular, these are issues devoted to: the classification of dangerous goods, the method of their transport and storage based on the global legal system regulating the transport of dangerous goods.

Course-related learning outcomes

Knowledge

1. Has knowledge in the field of physics, including the basics of classical mechanics, optics, electricity and magnetism, solid state physics, quantum and nuclear physics, necessary to understand specialist lectures in the field of the theory of construction materials and materials science, theory of machines and mechanisms, theory of electric drives and mechatronic systems .
2. Has ordered basic knowledge of the main divisions of technical mechanics: statics, kinematics and dynamics of a material point and a rigid body.
3. Has basic knowledge of the methods of linear measurements, measurements of stresses, strains, velocities, temperatures and fluid streams, including measurements of these quantities by electrical means.
4. Has basic knowledge of tribological processes occurring in machines, i.e. friction, lubrication and wear.
5. Has elementary knowledge of the impact of machinery and technology on the natural environment and global energy balances.

Skills

1. Can properly use modern equipment for measuring major physical quantities, used in machine research and production control.
2. Can apply basic technical standards regarding unification and safety and recycling.
3. Can design the technology behind a simple machine element as well as the technology for assembling and disassembling a machine.
4. Can prepare and present a short verbal and multimedia presentation devoted to the results of an engineering task.
5. Can interact with other people as part of teamwork (also of an interdisciplinary nature).

Social competences

1. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on its own.



2. Is ready to initiate actions for the public interest.
3. Student is ready to fulfill professional roles responsibly, taking into account the changing social needs, including:
 - developing the professional achievements,
 - maintaining the ethos of the profession,
 - observing and developing the rules of professional ethics and acting towards the observance of these rules.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge and 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

ADR amendment. Multimodal transport. Classification of dangerous goods. Characteristics of the classes of dangerous goods. Vehicles for the transport of dangerous goods - marking, equipment, construction, participation in road traffic. Documents required for transport. Ways of transportation. Types of tanks and tanks. conditions and requirements for storage facilities for hazardous substances. Procedures to reduce the risk of transportation and storage of dangerous goods.

Teaching methods

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

Bibliography

Basic

1. Bielecki M., Nieśpiałowski A., "ADR od A do Z nie tylko dla kierowców", Liwona Sp.z o.o, Warszawa 2019
2. Grzegorzczak K., Buchcar R., "Towary niebezpieczne. Transport w praktyce", Wydawnictwo ADeR, Błonie 2009
3. Kizyn M., "Poradnik przechowywania substancji niebezpiecznych zgodnie z wytycznymi unijnymi REACH i CLP", Wydawnictwo Łukasiewicz ILiM, Poznań 2011

Additional

1. Grzegorzczak K., Buchcar R., "Przewóz drogowy towarów niebezpiecznych ADR", Wydawnictwo ADeR, Błonie 2009



Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tutorials, preparation for tests) ¹	20	1,0

¹ delete or add other activities as appropriate