COURSE DESCRIPTION CARD - SYLLABUS

Course name
Vehicles and combined transport systems

Course

Field of study
Mechanical and Automotive Engineering

Year/Semester
2/3

Area of study (specialization)
Rail vehicles

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
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Małgorzata Orczyk

malgorzata.orczyk@put.poznan.pl

tel:. 61 665 2612

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:
mgr inż. Julian Kominowski

julian.kominowski@put.poznan.pl

tel:. 61 665 2841

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Prerequisites

KNOWLEDGE: The student has a general knowledge of the construction of rail vehicles. He is up to date with the latest trends in machine building and rail vehicles and can determine the impact of individual branches transport to the environment.

SKILLS: The student is able to use the acquired knowledge to solve simple problems related to determining the impact of transport on the environment. Can draw a diagram by hand and simple machine element according to the rules of technical drawing and can acquire information from literature, the Internet, databases of other sources.

SOCIAL COMPETENCES: The student is able to cooperate in a group taking different roles in it, demonstrates independence in solving problems, gaining and improving the acquired knowledge and skills, is aware of the importance and understands the non-technical aspects and effects of the impact transport to the environment.

Course objective

To acquaint students with the basic concepts of combined transport, overview basic characteristics, design solutions of this transport subsystem, its infrastructure, transport technologies used and the impact of this subsystem on the environment natural.

Course-related learning outcomes

Knowledge

Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment.

Has general knowledge of standardization, EU recommendations and directives, national, industry and international standards systems, and industrial standards.

Has extensive knowledge of selected departments of technical mechanics related to the selected specialization.

Skills

He can estimate the potential threats to the environment and people from the designed working machine and vehicle from a selected group.

He can advise on the selection of machines for the technological line as part of the specialization.

Can write a technical and scientific study in a foreign language on the basis of literature and other sources of information, including internet sources, and present an oral presentation.

Social competences

He is ready to critically assess his knowledge and received content.

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.

Is willing to think and act in an entrepreneurial manner.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam.

Programme content

The concept of the transport, freight and rail freight process. Presentation of the type structure of freight transport in Poland and the measures used transport in individual modes of transport. Presentation of the development of intermodal transport in Poland, in Europe and its impact on the

environment. Intermodal terminals, its components and handling equipment at terminals. Overview, characteristics and construction of technology intermodal transport. Acquaintance with the operation of economic entities related to combined transport - study visit to a research unit and in a logistics company.

Teaching methods

1. lecture with a multimedia presentation

Bibliography

Basic

1. Stokłosa J., Transport intermodalny Technologia i organizacja. Wydawnictwo Naukowe Wyższej Szkoły Ekonomii i Innowacji, Lublin 2011.

2. Kwaśnowski S., Nowakowski T., Zając M., Transport intermodalny w sieciach logistycznych. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2008.

3. Medwid M., Cichy R., Techniczne środki transportu kombinowanego kolejowo – drogowego. Instytut Pojazdów Szynowych TABOR, Poznań 2016.

Additional

1. Wronka J., Transport kombinowany / Intermodalny Teoria i Praktyka. Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin 2014.

2. Materiały Urzędu Transportu Kolejowego.

3. Materiały Głównego Urzędu Statystycznego.

4. Zalewski P., Siedlecki P., Drewnowski A., Technologia Transportu Kolejowego. Wydawnictwa komunikacji i Łączności, Warszawa 2013.

5. Rokicki T., Intermodalne jednostki ładunkowe. Wydawnictwo SGGW, Warszawa 2015.

6. Rydzkowski W., Przewozy Intermodalne. Biblioteka logistyka, Poznań 2015.

7. Medwid M., Polski system transportu kolejowo-drogowego (bimodalnego) typu „TABOR” Instytut Pojazdów Szynowych „TABOR” Poznań 2006.

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	2,0
Classes requiring direct contact with the teacher	18	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	12	1,0

[1] delete or add other activities as appropriate