Państwowa Wyższa Szkoła Zawodowa
im. H. Cegielskiego w Gnieźnie

Institute of Management and Transport

Name of modules	Code
Automation of transport and storage processes	

COURSE DESCRIPTION CARD		
Field of study: **Transport**	Training profile (general academic/practical): **practical**	Course (obligatory/optional): **obligatory**
Specialization: **Logistics and transport technology**	Subject offered in: **Polish**	ECTS **2**
Cycle of studies: **first**	Field of studies: **technical sciences**	
Status of subject in curriculum (basic, specialized, other)		
Status of subject in curriculum (basic, specialized, other) **specialized**	(general academic, from other department) **general academic**	

Lecturer in charge of the subject:
Unit providing the training: Institute of Management and Transport
mgr Magdalena Ziętek-Koczan
e-mail: mgdzietek@gmail.com

Initial requirements in knowledge, skills, social competences:

1	**Knowledge:**	Basic knowledge of technical mechanics and foundation construction machinery, storage issues and transport equipment like conveyors and
2	**Skills:**	Ability of effective self-education in the fields related to transportation, as a chosen course of study
3	**Social competences:**	Student is aware of the need to broaden their

The aim of the subject:

Acquainting with the construction of some automatic control devices in transport and storage processes, determining the economic efficiency of the automation of reloading work.necessary theoretical knowledge with practical classes, illustrates the impact of modern technologies on the sustainable development of transport as a component of the global economy.

Training outcomes

Knowledge: As a result of the training course a student is able to:	Reference to field-related training outcomes

1	Student recreates knowledge in the field of mechanics and mechanical properties of materials. Student is able to list and explain strength hypotheses. He can describe the kinematics and dynamics of a point and rigid body.	T1P_W01
2	Student defines key concepts in the field of logistics, determines the factors of transport production and can organize transport of various loads. Student recreates knowledge about own transport in production and service activities.	T1P_W04, T1P_W08, T1P_W11, InzP_W03
3	Student lists and describes the structure, the principles of exploitation, planning inspections, repairs of machinery, means of transport and technical objects. Explains the functioning of the various systems used in transport.	T1P_W08 T1P_W11 InzP_W03
4	Student lists and defines loading, storage processes, material and information flow in the value system for the evaluation of variants of designed warehouses, as well as in the field of automation of transport and storage processes.	T1P_W03, T1P_W04, T1P_W07, InzP_W05
Skills: As a result of the training course a student is able to:		Reference to field-related training
1	Student acquires information from domestic and foreign literature, databases and other sources. Analyzes the obtained information, interprets and synthesizes it.	T1P_U01 T1P_U02
2	Student has the ability to self-study in order to improve professional skills by using modern teaching tools, such as remote lectures, websites, teaching programs and e-books.	T1P_U05 T1P_U07
3	Student uses the acquired mathematical theories to create and analyze simple models of transport and logistics systems	T1P_U09 InzP_U02
4	Student is able to analyze the usefulness of basic methods and tools for solving simple engineering tasks, typical for transport, and to select and use the most appropriate methods and tools.	T1P_U15 InzP_U07
Competences: As a result of the training course a student is able to:		Reference to field-related training outcomes
1	Student is aware of the need for continuous training, understands the social role of a technical university graduate.	T1P_K01 T1P_K07 InzP_K01
2	Student perceives the essence and understands the non-technical aspects and effects of the transport engineer's activities and its impact on the natural environment and the need to take responsibility for the taken decisions.	T1P_K02 InzP_K01

3	Student correctly identifies and prudently solves dilemmas related to the profession.	T1P_K05

Assumed grading methods

Lectures: Written / oral test

Classes / laboratories: Checking and rewarding the increase of knowledge based on the tasks carried out during the exercises

Program content

Characteristics of loading processes and automation means. Methods of building block diagrams of technical means of automation. High storage warehouse control system. Division, tasks and functional actions of automatic control in material flow technology. Types of control. Methods of automatic programming devices working. Structural solutions for automated systems for near transport and storage of loads. Complete mechanized and robotic picking technology. Picking technology using stationary and mobile robots. Automation of warehouse processes - the first and second level of automation. Classification of mobile robots due to their intellectual capabilities.

Main bibliography:

1. W. Kaczmarek, J. Panusiak, Robotyzacja procesów produkcyjnych, Wydawnictwo Naukowe PWN, Warszawa 2017
2. Korzeń Z.: Logistyczne systemy transportu bliskiego i magazynowania T1i2. Instytut Logistyki i Magazynowania. Poznań 1998
3. Dudziński Z., Kizyn M.: Vademecum gospodarki magazynowej. Wydawnictwo Oddk, Gdańsk 2002

Supplementary bibliography:

1. Jakubowski L.: Technologia prac ładunkowych, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2003

Student's involvement

Studies	full-time studies		part-time study	
Form of activity	hours	ECTS	hours	ECTS
Total number of hours	45	2	45	2
Hours requiring direct contact with a lecturer	30	2	18	1
Practical classes	15		9	
Activities requiring self-studying	15	0	27	1