

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Organization of Traffic		Code 1010624251010620366
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 5
Elective path/specialty Railway Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 18 Classes: - Laboratory: - Project/seminars: 8		No. of credits 5
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 100 5%
Responsible for subject / lecturer: Prof. Jerzy Kwaśnikowski, DSc., DEng. email: jerzy.kwasnikowski@put.poznan.pl tel. +48 61 665 2612 Faculty of Working Machines and Transportation Piotrowo 3 street, 60-965 Poznan		Responsible for subject / lecturer: Małgorzata Orczyk, DEng. email: malgorzata.orczyk@put.poznan.pl tel. +48 61 665 2017 Faculty of Working Machines and Transportation Piotrowo 3 street, 60-965 Poznan
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The student has some basic knowledge about the place of railway transport in the economic system. The student knows and understands the basic methods and tools, practical from piece band, hard, especially movement. The student knows the main tasks of railway transportation in the area of functioning and development of enterprises, regions and countries.
2	Skills	The student is able to use the concepts and methods in the description of technical problems. The student can use the acquired knowledge for the analysis of specific phenomena and processes occurring in technical systems. The student can solve concrete problems in technical systems.
3	Social competencies	The student can work in a group, taking in her different roles. The student determines the priorities is important in solving the set tasks. Student showing independence in solving problems, acquisition and improvement of acquired knowledge and skills.
Assumptions and objectives of the course: The aim of the subject is to provide students with information on the organization and the theory of motion of the train. Students receive knowledge and skills in the field of functioning of electric traction and internal combustion, especially power transmission through the system drive to the wheels and tires, problems of modeling and simulation using the modeling of movement of a train, learn the rules disable the conduct of the train. They provide basic information about the functioning and the role of transport in national (regional) and international transportation system. I can say, the external effects of transport.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. has ordered theoretically knowledge of the movement of rail-borne vehicles, kinematics and dynamics figure, hard, knows the essence of different types of draught rail - [K1A_W04]		
2. knowledge about the functioning and the role of transport in national (including regional and international transport - [K1A_W10]		
3. can assess the external effects of rail transport, especially on the background of trouble environmental various sectors of transport - [K1A_W10]		
4. has ordered theoretically knowledge of different types of engines, mechanical and electric rail vehicles - [K1A_W14]		
Skills:		

<p>1. can get access to information from the literature, the Internet, databases, and other sources and foreign languages, can be integrated to interpret the information received and to make conclusions from them - [K1A_U01]</p> <p>2. Knows how to communicate using different methods in a professional environment and other environments with a description of the systems of railway transport - [K1A_U02]</p> <p>3. able to use their own language and international (English or other) to the extent sufficient for understanding technical texts (knowledge of technical terminology) - [K1A_U03]</p> <p>4. knows how to use verbal communication one additional language at the level of the language in everyday life, can in that language to describe the issues studied direction - [K1A_U04]</p> <p>5. has the skill of self-education using modern teaching, such as remote lectures, website and database programs, didactic, books, magazines, electronic - [K1A_U06]</p> <p>6. he can organize and wisely manage the process of transport, supported by management training, especially the chosen specialty. - [K1A_U16]</p> <p>7. can use mastered the theory and mathematics to create and analysis of simple models logistics - [K1A_U18]</p>
<p>Social competencies:</p> <p>1. understands the need and knows opportunities for continuous professional development in the field, knows the need to acquire new knowledge for professional development - [K1A_K01]</p> <p>2. Knows how to think and act this way, enterprising, to decide, to act for the development of the employer and society - [K1A_K07]</p> <p>3. is consciousness transfer the acquired knowledge to the society, making efforts to this information were clear - [K1A_K08]</p>

Assessment methods of study outcomes	
A written exam, a Colloquium loans, project	
Course description	
<p>The process of movement of a train in the system of exploitation of Railways. Mathematical model of the process, process variables (status, management, physical), restrictions and violations. Problems of optimization of the process of movement, quality criteria and limitations. Characteristics of machines, plants and thermal power, processing and transmission of energy drive, traction characteristics of diesel locomotives. Elements of computer simulation of motion (us) and define the conduct of the train.</p> <p>The functioning and the role of transport in national (including regional and international system of transportation. External effects of transport, including external costs.</p>	
<p>Basic bibliography:</p> <p>1. Jan KACPRZAK, Włodzimierz KOCZARA - Podstawy napędu elektrycznych pojazdów trakcyjnych. WKŁ, Warszawa 1990.</p> <p>2. Jerzy KWAŚNIKOWSKI - Modelowanie i symulacja komputerowa procesu ruchu pociągu. Wyd. PP (Rozprawy PP, nr 264),1992.</p> <p>3. Jerzy MADEJ. Teoria ruchu pojazdów szynowych. Of. Wyd. Pol. Warsz. 2004.</p>	
<p>Additional bibliography:</p> <p>1. Jerzy LESZCZYŃSKI - Modelowanie systemów i procesów transportowych. Wyd.Pol. Warsz. 1990, 1994 (skrypt).</p> <p>2. Praca zbiorowa, T. Basiewicz(red.), Przystosowanie kolei do zwiększonych szybkości i dużych przewozów. WKiŁ, Warszawa, 1969.</p> <p>3. Zbigniew ROMANISZYN, Tadeusz WOLFRAM - Nowoczesny tabor szynowy. Wydanie specjalne Instytutu Pojazdów Szynowych Politechniki Krakowskiej, Kraków 1997.</p>	
Result of average student's workload	
Activity	Time (working hours)
1. Preparation for the performance	10
2. Participation in lectures	30
3. Fixing the contents of the lectures	10
4. Consultations	3
5. Exam preparation	10
6. Participation in the exam	2
7. Preparation of the project	10
8. Participation in the exercises of the project	15
9. Development of project report	10
10. Consultations	3
11. Preparation of set-off	6
12. Participation in success	2

Student's workload		
Source of workload	hours	ECTS
Total workload	82	3
Contact hours	49	2
Practical activities	33	1