

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Motor Vehicles</b>		Code <b>1010621251010610462</b>
Field of study <b>Transport</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>3 / 5</b>
Elective path/specialty <b>Ecology of Transport</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>1</b> Project/seminars: <b>-</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b>
<b>Responsible for subject / lecturer:</b> Andrzej Wołyński, PhD email: Andrzej.Wolynski@put.poznan.pl tel. 61-665-2236 Faculty of Working Machines and Transportation Piotrowo 3, 60-965 Poznań		<b>Responsible for subject / lecturer:</b> Hubert Pikosz, PhD email: Hubert.Pikosz@put.poznan.pl tel. 61-665-2709 Faculty of Working Machines and Transportation Piotrowo 3, 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	student possesses basic knowledge about machines, mechanics, construction of the machines and physics laws
2	<b>Skills</b>	student is able to integrate gathered information, interpret them and make conclusion, read the schematics and technical drawings
3	<b>Social competencies</b>	student is aware of roles played by means of transport in the human economics
<b>Assumptions and objectives of the course:</b> Teaching students about the construction and work of gears and mechanisms in cars		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Knows the functions, construction and properties of different kinds of basic car mechanisms - [K1A_W17]		
2. Knows the scope of appliance of different kinds of basic car mechanisms - [K1A_W21]		
3. Knows construction and functions of security and traction control mechanisms - [K1A_W20]		
4. Knows the influence of different mechanisms on security of car movement - [K1A_W24]		
<b>Skills:</b>		
1. Can describe roles, functions, construction and funtion variables, properties and scope of appliance of various mechanisms and main systems in cars - [K1A_U03]		
2. Knows the basic variables influencing traction properties and movement security - [K1A_U15]		
<b>Social competencies:</b>		
1. Can connect various cars with various soial activities - [T1A_K01]		
2. Knows the influence of cars on people and environment - [T1A_K02]		
3. Is able to broaden knowledge in the field of car construction and properties, as well as their elements - [T1A_K03]		
<b>Assessment methods of study outcomes</b>		
Oral and written exam, laboratory passed based on passing of each module		

<b>Course description</b>		
<p>Kinds and properties of power systems. Tasks, construction, function properties, construction types and properties of: clutches, gearboxes, camshafts, transmissions, differentials, half-shafts, hubs. Multiple shafts drives - construction and properties. Types and properties of gears. Tasks, construction, function properties, construction types and properties of: shock absorbers, stabilizers, types and properties of steering gears. Conditions of transverse and longitudinal stability in cars. Tasks, construction, types and properties of steering mechanisms and turning mechanisms. Legal requirements applied to construction and function of braking gears. Types and properties of braking gears. Tasks, construction, function properties, construction types and properties of brakes and brakes starting mechanisms. Additional brakes. ABS, ASR and ESP gears: tasks, construction, action. Task, types, properties and application of carrying gears. Construction of frames and bodies. Legal requirements, lighting types, types and properties of different light sources. Active, passive and ecological security - factors influencing every type of security</p>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Reimpell J., Betzler J.: Podwozia samochodów ? Podstawy konstrukcji. WKŁ, W-wa, 2003</li> <li>2. Zieliński A.: Konstrukcja nadwozi samochodów osobowych i pochodnych. WKŁ, W-wa, 2003</li> <li>3. Prochowski L., Żuchowski A.: Samochody ciężarowe i autobusy. WKŁ, W-wa, 2004</li> <li>4. Zajac M.: Układy przeniesienia napędu samochodów ciężarowych i autobusów. WKŁ, W-wa, 2003</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. 1. Auto Expert: Budowa i eksploatacja pojazdów. Tom I ? Działanie zespołów i podzespołów. Praca Zbiorowa, Vogel, Wrocław, 2004</li> <li>2. Transport ? technika motoryzacyjna, Auto ? technika motoryzacyjna</li> <li>3. Orzełowski S.: Budowa podwozi i nadwozi samochodowych. WSiP, W-wa, 1999</li> <li>4. Wołyński A.: Materials for a lecture "Construction of the cars"</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Participation in lecture	30	
2. Consolidation on lecture	5	
3. Consultations	2	
4. Exam preparedness	10	
5. Participation in the exam	2	
6. Preparedness to laboratories	7	
7. Participation in laboratories	15	
8. Consolidation of laboratories/Raport	8	
9. Participation in passing exam	1	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	80	3
Contact hours	51	2
Practical activities	29	1