STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Structure of Cars**		Code **1010614151010611971**
Field of study **Mechanical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 5**
Elective path/specialty **Motor Vehicles and Tractors**	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: **44** Classes: **-** Laboratory: **10** Project/seminars: **-**		No. of credits **6**
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** **Technical sciences**		ECTS distribution (number and %) **4 66%** **2 34%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	student possesses basic knowledge about machines, mechanics, construction of the machines and physics laws
2	**Skills**	student is able to integrate gathered information, interpret them and make conclusion, read the schematics and technical drawings
3	**Social competencies**	student is aware of roles played by means of transport in the human economics

Assumptions and objectives of the course:

Teaching students about the construction and work of gears and mechanisms in cars

Study outcomes and reference to the educational results for a field of study

Knowledge:

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-W20]
3. Possesses basic knowledge of theory of the car movement - [K1A-W24]
4. Knows construction and functions of security and traction control mechanisms - [-]
5. Knows the influence of different mechanisms on security of car movement - [-]

Skills:

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 K1A-U17]

Social competencies:

1. Can connect various cars with various soial activities - [K1A-K01]
2. Knows the influence of cars on people and environment - [K1A-K02]
3. Is able to broaden knowledge in the field of car construction and properties, as well as their elements - [K1A-K03]

Assessment methods of study outcomes

Oral and written exam, laboratory passed based on passing of each module

Course description

Movement resistance. 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, passibe and ecological security - factors influencing every type of security

Basic bibliography:

1. Reimpell J., Betzler J.: Podwozia samochodów ? Podstawy konstrukcji. WKŁ, W-wa, 2003
2. Zieliński A.: Konstrukcja nadwozi samochodów osobowych i pochodnych. WKŁ, W-wa, 2003
3. Prochowski L., Żuchowski A.: Samochody ciężarowe i autobusy. WKŁ, W-wa, 2004
4. Zając M.: Układy przeniesienia napędu samochodów ciężarowych i autobusów. WKŁ, W-wa, 2003

Additional bibliography:

1. Auto Expert: Budowa i eksploatacja pojazdów. Tom I ? Działanie zespołów i podzespołów. Praca Zbiorowa, Vogel, Wrocław, 2004
2. Transport ? technika motoryzacyjna? , ?Auto ? technika motoryzacyjna?
3. Orzełowski S.: Budowa podwozi i nadwozi samochodowych. WSiP, W-wa, 1999
4. Wołyński A.: materials for a lecture "Construction of the cars"

Result of average student's workload

Activity	Time (working hours)
1. Participation in lecture	60
2. Consolidation on lecture	15
3. Consultations	2
4. Exam preparedness	15
5. Participation in the exam	3
6. Preparedness to laboratorries	15
7. Participation in laboratories	15
8. Consolidation of laboratories/Raport	28
9. Consultations	2
10. Preparedness to passing exam	2
11. Participation in passing exam	1

Student’s workload

Source of workload	hours	ECTS
Total workload	158	6
Contact hours	83	3
Practical activities	65	3