

Cracow University of Technology

Course syllabus

binding for the doctoral students of the CUT Doctoral School commencing their studies
in the academic year 2022/2023

Information on the course

Name of the course in Polish	Budowa pojazdów
Name of the course in English	Vehicle construction
Number of the ECTS points	1
Language of instruction	Polish
Category of the course	Choosable
Field of education	Engineering and technology
Discipline of education	Mechanical engineering
Person responsible for the course Contact	Prof. Marek Brzeżański, <i>doctor habilitatus</i> marek.brzezanski@pk.edu.pl

Type of course, number of hours in the study programme curriculum

Semester	Credit type (G / NG)*	Lecture	Practical classes	Laboratory	Computer Lab	Project Class	Seminar
2, 3, 4, 5	G	15	0	0	0	0	0

*G – graded credit, NG – non-graded credit

Course objectives

Code	Objective description
Objective 1	Introduction to the knowledge about the construction of vehicles as well as the design and individual functions of selected vehicle components.
Objective 2	Acquiring the ability to select design solutions and components for specific types of vehicles.

Learning outcomes

Code	Description of the learning outcome adjusted to the specific characteristics of the discipline	Learning outcome symbol in the CUD DS	Methods of verification
OUTCOMES RELATED TO KNOWLEDGE			
EUW1	The doctoral student has knowledge covering theoretical foundations, general issues and selected specific issues in the field of construction of motor vehicles.	E_W01, E_W02	Involvement in class activities, a graded presentation.
EUW2	The doctoral student knows and understands the main trends in the development of vehicle structures for vehicles equipped with various types of drive units.	E_W01, E_W02	Involvement in class activities, a graded presentation.
OUTCOMES RELATED TO SKILLS			

EUU1	The doctoral student is able to use knowledge from various fields of science to identify and solve technical and design problems occurring in vehicle mechanisms.	E_U01	Involvement in class activities, a graded presentation.
EUU2	The doctoral student has the ability to use knowledge from various fields of science and technology to perform research tasks, in particular in the field of constructing motor vehicles.	E_U01	Involvement in class activities, a graded presentation.
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student has the ability to recognize the importance of knowledge in solving cognitive and practical problems related to the social effects of the development of means of transport.	E_K03	Involvement in class activities, a graded presentation.

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	History of vehicle development and its impact on society and economy.	EUW1, EUW2, EUK1	2
W2	Selected issues of vehicle traffic stability, and distribution of drive system components.	EUW1, EUW2, EUU1	2
W3	The supporting structure of the car body.	EUW1, EUW2, EUU1, EUU2,	3
W4	Design of the undercarriage of a motor vehicle.	EUW1, EUW2, EUU1, EUU2,	2
W5	Design of a motor vehicle with a hybrid and electric drive system.	EUW1, EUU1, EUK1	2
W6	Design of a vehicle with a drive system with a hydrogen fuel cell drive unit.	EUW1, EUU2, EUK1	2
W7	Construction of a motor vehicle in terms of passive and active safety.	EUW2, EUU2, EUK1	2

The ECTS points statement

WORKING HOURS SETTLEMENT	
Type of activity	Average number of hours (45 min.) dedicated to the completion of an activity type
SCHEDULED CONTACT HOURS WITH AN ACADEMIC TEACHER	
Hours allotted in the syllabus	15
Consultations	2
Examination / course credit assignment	2
HOURS WITHOUT THE PARTICIPATION OF AN ACADEMIC TEACHER	
Independent study of the course contents	8
Preparation of a paper, a report, a project, a presentation, a discussion	3
ECTS POINTS STATEMENT	
Total number of hours	30
The ECTS points number	1

Preliminary requirements

No.	Requirements
1	Knowledge of general mechanics.
2	Ability to construct mechanical devices.

Course credit assignment conditions / method of the final grade calculation

No.	Description
COURSE CREDIT ASSIGNMENT CONDITIONS	
1	Involvement in class activities.
2	Preparing a presentation on the subject of vehicle construction.
METHOD OF THE FINAL GRADE CALCULATION	
Average grade for class involvement and the presentation.	

Additional information

None specified.

The course reading list

1	Studziński K., <i>Samochód - Teoria Konstrukcja i Obliczanie</i> , Warszawa, 1980, WKiŁ.
2	Reński A., <i>Bezpieczeństwo czynne samochodu</i> , Warszawa, 2011, Oficyna Wydawnicza Politechniki Warszawskiej.
3	Brzeżański M., Juda Z., <i>Napędy hybrydowe, ogniwa paliwowe i paliwa alternatywne</i> , Warszawa, 2010, WKiŁ.
4	Jaśkiewicz Z., <i>Projektowanie elementów . Poradnik Inżyniera samochodowego</i> , Warszawa, 1990, WKiŁ.
5	Reimpell J., <i>Podwozia Samochodów - Podstawy konstrukcji</i> , Warszawa, 2001, WKiŁ.