COURSE SPECIFICATION

Course code	full-time programme:	**M#2-S1-ME-301**
	part-time programme:	
Course title in Polish	**Technika samochodowa**	
Course title in English	**Automotive Engineering**	
Valid from (academic year)	**2024/2025**	

GENERAL INFORMATION

Programme of study	**MECHANICAL ENGINEERING**
Level of qualification	**first-cycle**
Type of education	**academic**
Mode of study	**full-time programme**
Specialism	**all**
Department responsible	**Department of Automotive Engineering and Transport**
Course leader	**Dr hab. inż. Rafał Jurecki, prof. PŚk**
Approved by	**dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering**

COURSE OVERVIEW

Course type		**programme-specific**
Course status		**compulsory**
Language of instruction		**English**
Semester of delivery	full-time programme	**Semester III**
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		**NO**
ECTS value		**2**

Mode of instruction		**lecture**	**class**	**laboratory**	**project**	**seminar**
No. of hours per semester	full-time programme	**15**		**15**		
	part-time programme					

LEARNING OUTCOMES

Category of outcome	**Outcome code**	**Course learning outcomes**	**Corresponding programme outcome code**
Knowledge	W01	Has basic knowledge about different types of cars	MiBM1_W02 MiBM1_W03 MiBM1_W04 MiBM1_W06

	W02	Has basic knowledge about the construction and principles of operation of the main systems included in the car	MiBM1_W02 MiBM1_W04 MiBM1_W06
	W03	Has basic knowledge about passive and active safety systems in the car, elements supporting the work of the driver, OBD systems	MiBM1_W02 MiBM1_W09 MiBM1_W11 MiBM1_W12
Skills	U01	Can read OBD faults	MiBM1_U01 MiBM1_U05 MiBM1_U10 MiBM1_U11
Competence	K01	Understands the need to study and raise your professional competences in the field of car technique	MiBM1_K01
	K02	Is aware of the importance and understands the connections between engineering and non - technical activities, in the aspect of the effects of environmental impact and responsibility for decisions made in the area of car technique.	MiBM1_K02
	K03	Understands the need to provide public opinion in a way that understands information regarding the achievements related to issues related to motoring and environmental threat	MiBM1_K05

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	Classification and types of motor vehicles. General principles of vehicle construction. Construction of basic structural systems of various types of cars. Construction and principle of operation of drive systems in various types of cars: construction and principle of operation of brake systems. Construction of car suspensions; dependent, independent suspensions; Classic, semi -active and active suspensions. Construction of the road and steering. The principle of operation and requirements for the work of electronic systems supporting the work of a driver, e.g. ABS, ASR, ESP, TCS, ACC, EBA, HLA CDC in motor vehicles. Examples of applications. Elements in the car increasing active and passive safety. Impact of body structure and chassis on safety (visibility from the driver's place, body shape, controlled crushed zone, steering, tires, etc.). Types of gas pillows, seat belt tensioners, etc. Procedures for conduct and devices for comprehensive diagnostics of the vehicle and its assemblies and functional systems. Modern electronic diagnostic systems based on OBD, OBDII and EOBD. Possibility to detect system faults
laboratory	As part of the laboratory, students will become familiar with the construction of the basic systems included in the car, e.g. the drive system, the braking, driving and steering system and suspension. He reads the elements that make up these systems. He learns elements of passive and active safety in motor vehicles. He reads the diagnostics of the vehicle using the OBD II diagnostic and reading the defect codes.

ASSESSMENT METHODS

Outcome code	Methods of assessment *(Mark with an X where applicable)*					
	Oral examination	Written examination	Test	Project	Report	Other
W01			x			
W02			x			
W03			x			
U01					x	
K01					x	
K02			x			
K03			x			

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Passing the tests with a minimum of 50%.
laboratory	non-examination assessment	Passing the tests with a minimum of 50%.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
1.	Scheduled contact hours	L	C	Lb	P	S	L	C	Lb	P	S	h
		15		15								
2.	Other contact hours (office hours, examination)	2		2								h
3.	**Total number of contact hours**	**34**										h
4.	**Number of ECTS credits for contact hours**	**1,4**										ECTS
5.	**Number of independent study hours**	**16**										h
6.	**Number of ECTS credits for independent study hours**	**0,6**										ECTS
7.	**Number of practical hours**	**25**										h
8.	**Number of ECTS credits for practical hours**	**1,0**										ECTS
9.	**Total study time**	**50**										h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**2**										ECTS

READING LIST

1. Jaśkiewicz Z., Wąsiewski A. Układy napędowe pojazdów samochodowych: obliczenia

projektowe. Oficyna Wydawnictwa Politechniki Warszawskiej. Warszawa, 2002
2. Prochowski L., Żuchowski A. Samochody ciężarowe i autobusy. WKiŁ, Warszawa, 2016
3. Reimpell J. Podwozia samochodów. Podstawy konstrukcji. WKiŁ, Warszawa, 1997
4. Reński A. Budowa Samochodów. Układy hamulcowe i kierownicze oraz zawieszenia. Skrypt, Wydawnictwa Politechniki Warszawskiej, Warszawa, 1992
5. Trzeciak K., Diagnostyka samochodów osobowych, WKiŁ, Warszawa 2005
6. Leiter R. Hamulce samochodów osobowych i motocykli. WKiŁ, Warszawa, 1998
7. ABS: układy zapobiegające blokowaniu kół: Bosch, Bosch 2E, ATE, Teres MK II /tł. z wł. A. Tylusińska – Kowalska. Warszawa: ”Auto”, 2004
8. Uzdowski M., Abramek K.F., Garczyński K. Eksploatacja techniczna i naprawa. WKiŁ, Warszawa 2003
9. Trzeciak K., Wyposażenie warsztatów samochodowych. Wyd. Auto, Warszawa 2003

Czasopisma

1. Auto Technika Samochodowa
2. Automotive Engineering
3. Automobiltechnische Zeitschrift (ATZ)
4. JSAE – Reviev
5. Auto-Expert