

SUBJECT CARD FOR RECRUITMENT 2023/2024 FORM OF STUDIES: FULL-TIME							
GENERAL INFORMATION							
1. Name of subject	Automotive Systems Engineering						
2. Name of the course of study	Mechanics and Mechanical Engineering						
3. Level of study	Full-time First Degree Studies						
4. Number of ECTS credits	1						
5. Number of hours per semester							
	semester	lect.	excer.	lab.	prj.	zp.	works.
	III	15					
6. Language	english						
7. Lecturers	Łukasz Grabowski, PhD. eng.,						
DETAILS							
8. Prerequisites							
1. Basic knowledge of the construction of spark-ignition and compression-ignition internal combustion engines.							
2. Basic knowledge of electronics and electrical engineering							
3. Basic knowledge of combustion engine control systems							
9. Objectives							
C1	To familiarize students with the history of the development of automotive power systems.						
C2	To familiarize students at a basic level with the structure of automotive power supply systems.						
C3	To familiarize students at a basic level with the construction and diagnostics of alternative vehicle power systems						
C4	To familiarize students at a basic level with the structure and principles of operation of vehicle IT networks						
C5	To familiarize students at a basic level with the structure and principles of operation of hybrid and electric vehicle systems						
10. The introduction students with the principles of conducting and developing the results of numerical calculations.							
A student who has passed the subject:					reference to directional learning outcomes		
KNOWLEDGE							
EU01	Knows the structure and principles of operation of basic power systems for vehicles with spark-ignition and compression-ignition engines and knows the history of their development					K_W23	
EU02	Knows the history of the development of vehicle on-board diagnostic systems					K_W11 K_W23	
EU03	nows at a basic level the structure and principles of operation of alternative fuel vehicle supply systems and how to diagnose them					K_W23	
SKILLS							

EU04	Is able to list and briefly characterize IT networks used in motor vehicles and knows their structure and method of data transmission on the bus	K_U01
EU05	Is able to list the types and briefly characterize electric drive systems of motor vehicles	K_U05
SOCIAL COMPETENCE		
EU06	Is aware of the non-technical effects of a mechanical engineer's activity, including its impact on the environment, which creates a great sense of responsibility for the decisions made	K_K05
11. Programme of lecture		
Form of classes - lectures		
Laboratorium: 1) Development of power supply systems for SI and CI vehicles. 2) Development of automotive vehicle diagnostic systems and systems. OBD on-board diagnostic systems. 3) Construction, operating principle and history of development of alternative fuel vehicle supply systems. Methods of diagnosing LPG and CNG fuel systems. 4) IT networks in motor vehicles. 5) Development of electric drive systems for hybrid vehicles and electric vehicles.		
12. Teaching tools/methods		
1. Lecture with multimedia presentations		
2. Discussion and other methods of assimilating student knowledge		
3. Consultation		
13. Assessment methods (forming; summary)		
1. Active participation in classes.		
2. Grade for passing lectures (1st or 2nd colloquia).		
14. Student workload		
Form of activity		number of hours
1. Classes with direct participation of the teacher and consultations		20
2. Student workload		5
total		25
summary number of ECTS points		1
15. Basic and supplementary literature		
Basic literature::		
1. Reif Konrad: Fundamentals of Automotive and Engine Technology. Springer, Wiesbaden 2014		
2. Denton T.: Advanced automotive fault diagnosis. Fifth Edition, Routledge Taylor&Francis Group, London New York 2021		
Supplementary literature:		
1. Denton T.: Electric and Hybrid Vehicles, BA, FIMI, 2 nd edition London, Routledge Taylor & Francis Group, 2020		
2. Husain I.: Electric and hybrid vehicles Design Fundamentals Third Edition, Taylor&Francis Group, London New York 2021		
16. Forms of assessment - details		
<p>he condition for passing the course is to successfully write a test on theoretical content related to the issues discussed during the lecture.</p> <p>In the case of tests and written works, percentage ranges are used in grading:</p>		

100% - 91% = 5,0
90% - 81% = 4,5
80% - 71% = 4,0
70% - 61% = 3,5
60% - 51% = 3,0
50% - 0% = 2,0

Absence during the colloquium is equivalent to an unsatisfactory grade (2.0). In the event of an absence or receiving a negative grade, the student is obliged to pass the test on the make-up date set by the instructor.

A method of verifying learning outcomes of social competence:

Observation of student's engagement and work during the classes..

17. Other useful information on the subject matter

1. Direct information about the issues and programme content is provided by the tutor duringt he classes and during consultations.
2. Classes will be take place in AB in Biała Podlaska.
3. The classes will take place according to the current timetable.
4. The consultations will take place in accordance with the timetable of the leader.