GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fuel Systems and of Combustion Engines, PG_00039975		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Zakład Ekoinżynierii i Silników Spalinowych -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Zbigniew Kneba	
	Teachers	dr hab. inż. Zbigniew Kneba	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	45	6.0	24.0	75

Subject objectives

To acquaint students with the current designs of fuel and air supply systems. Presentation of the operation of ignition systems of spark-ignition engines. Cooling and lubrication systems are also discussed. Particular emphasis was placed on solutions that reduce the harmfulness of engines to the natural environment. Vehicle tests were presented to evaluate their properties.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	Understands the fuel, air and engine ignition processes.	[SW1] Assessment of factual knowledge
[K6_U07] is able to design a typical construction of a mechanical device, component or a testing station using appropriate methods and tools, adhering to the set usage criteria	He can select engine accessories components	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Petrol supply systems for spark ignition engines: multipoint direct and indirect injection. Electric ignition systems. Supply with LPG, CNG and LNG gas fuels. Diesel fueling: unit injectors and common rail. Emissivity tests of engines. Programming of drivers. Electronically controlled cooling systems. Lubrication systems. Development trends of drives with internal combustion engines.

Prerequisites and co-requisites

Knowledge of the design and operation of internal combustion engines is required

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	50.0%	100.0%

Recommended reading

Basic literature	www,combustion-engines.eu
Supplementary literature	.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Draw a graph of the oxygen sensor signal after the accelerator pedal is depressed sharply and then released as a function of time.

Work placement	Not applicable