GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Mechatronics od vehicles and working machinery, PG_00064798 | | |
| Field of study | Mechatronics | | |
| Date of commencement of studies | February 2027 | Academic year of realisation of subject | 2027/2028 |
| Education level | second-cycle studies | Subject group | Specialty subject group<br>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 | 1 | Language of instruction | Polish |
| Semester of study | 2 | ECTS credits | 2.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Piotr Mioduszewski | |
| | Teachers | dr inż. Wojciech Owczarzak<br>dr hab. inż. Piotr Mioduszewski | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 15.0 | 0.0 | 0.0 | 30 |

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 | 30 | 4.0 | 16.0 | 50 |

**Subject objectives**

To familiarize students with issues related to the construction and maintenance of mechatronic systems in modern vehicles.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K7_W04] demonstrates knowledge encompassing selected issues in the field of detailed knowledge, particularly in the scope of methods, techniques, tools, and algorithms specific to Mechatronics | The student describes the structure and explains the principles of maitenence of mechatronic devices and systems in vehicles. | [SW1] Assessment of factual knowledge |
| [K7_U03] identifies and formulates task specifications in the scope of stationary and non-stationary mechatronic systems/processes design, including non-standard problems ans taking into consideration their non-technical aspects | Student explains principles of operation of mechatronic devices and systems in vehicles. | [SU3] Assessment of ability to use knowledge gained from the subject |
| [K7_U11] communicates and justifies opinions on specialized topics in a manner understandable to diverse audiences, including the use of modern techniques, including information technology | Student is able to determine the correct operation of mechatronic systems in vehicles and indicate possible malfunctions. | [SU4] Assessment of ability to use methods and tools<br>[SU2] Assessment of ability to analyse information |
| [K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Mechatronics, enabling developement and synthesis of stationary and non-stationary mechatronic systems, devices, and processes with continuous and discrete operation | Student demonstrates basic knowledge of development trends in the construction and operation of mechatronic systems in modern vehicles. | [SW1] Assessment of factual knowledge |

<table>
<tr><td>Subject contents</td><td>Course content – lecture<br><br>Active and passive vehicle and pedestrian safety systems. Anti-skid systems, traction control, and vehicle stabilization systems. Brake assist and emergency braking systems. Advanced driver assistance systems – ADAS. Introduction to autonomous vehicles.<br><br>Course content – laboratory<br><br>CAN-BUS system in vehicle comfort systems. ABS/ASR system with slip control function. Selected sensor and actuator elements of vehicle systems.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of mechanics of machines and devices. Basic knowledge of the construction of machines and devices. Fundamentals of electronics and electrical engineering. Fundamentals of computer science.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Test</td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Current articles on solutions for mechatronic systems in vehicles (mainly from manufacturers of these systems as well as vehicle manufacturers).</td></tr>
<tr><td>Supplementary literature</td><td>.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Active and passive vehicle and pedestrian safety systems. Anti-skid systems, traction control, and vehicle stability control. Brake assist and emergency braking systems. Advanced driver assistance systems – ADAS. Autonomous vehicles.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.