COURSE DESCRIPTION CARD - SYLLABUS

Course name
The joining technologies in the automotive production [S1MiTPM1>TŁwPM]

Course

Field of study
Materials and technologies for automotive industry

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr inż. Wojciech Gęstwa
wojciech.gestwa@put.poznan.pl

Lecturers

Prerequisites

The basic knowledge from the range of the machines construction and material engineering in the automotive industry. Skills: Logical thinking, associating image with description use of the information obtained from the library and the Internet. The understanding needs for learning and acquiring new knowledge.

Course objective

Uzyskanie wiedzy na temat możliwych sposobów łączenia elementów wytworzonych z różnych materiałów w przemyśle motoryzacyjnym zarówno w sposób rozłączny, jak i trwały. The obtainment of the knowledge on the subject of the possible joining methods of elements produced from different materials in the automotive industry both in the temporary way, how and permanent.

Course-related learning outcomes

Knowledge:
1. The student should name and describe the basic join of elements applied in the automotive production.
2. The student should characterize the proprieties of the material in dependence from the used element

joins applied in the automotive production.

Skills:
1. The student is able to choose appropriate the elements connections in depending on the properties of used material in the automotive production.
2. The student is able to offer and choose the device to the realization of the elements connections applied in the automotive production.
3. The student is able to design technological process of the elements joins applied in the automotive industry.

Social competences:
1. The student is active in analyzing and solving problems in a group.
2. Student jest świadomy roli technologii łączenia w procesach wytwarzania wyrobów w przemyśle motoryzacyjnym =the student is aware of the role of the joining technology in the production processes of products in the automotive industry.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:
The examination from lecture on basis of colloquium in character of written answer on 3 (three) to 6 (six) of questions or the test on the e-Kursy PP platform which is realized during the examination session.
The grade: dst (3.0) ÷ dst+ (3.5) => 50.1 ÷ 70%; db (4.0) ÷ db+ (4.5) => 70.1 ÷ 90%; bdb (5.0) => 90.1 ÷ 100%
Laboratory:
The credit is on the basis of oral or written answers from the scope of the content of each performed laboratory exercises, a report from each laboratory exercise according to the indications leading laboratory exercises.
The grade: dst (3.0) ÷ dst+ (3.5) => 50.1 ÷ 70%; db (4.0) ÷ db+ (4.5) => 70.1 ÷ 90%; bdb (5.0) => 90.1 ÷ 100%
In order to obtain the credit of laboratories all exercises must be included (the positive response and accept reports).

Programme content

The information basic about the methods of the elements joining in the automotive industry. The temporary and permanent join and the range of their use in the automotive production.

Course topics

Lecture:
1. The introduction: the essence of connections, his division connections applied in automotive elements.
2. The joint of screw and pipe.
3. The joint of peged, wedged, knuckled,mandreled and riveted
4. The joint of one-key- and splinde
5. The joint of spring, bearing
6. The joint of thermocompression, forced-in
7.The joint of welded
8.The joint of solders, glue.
Laboratory:
1. The screw joint - the analysis of the connection and the material struktry and property.
2. Theriveted joint - the analysis of the connection and the material struktry and property.
3. Thegully joint - the analysis of the connection and the material struktry and property.
4. The springed joint - the analysis of the connection and the material struktry and property.
5. The thermocompression joint - the analysis of the connection and the material struktry and property.
6. The welded joint - the analysis of the connection and the material struktry and property.
7. The joint of solders or glue - the analysis of the connection and the material struktry and property.

Teaching methods

1. Lecture: multimedia presentation, discussion.
2. Laboratory: practical exercises, experimentation, discussion, team work.

Bibliography

Basic:
1. Jasion P., Magnucki K.: Podstawy konstrukcji maszyn, Wyd. Politechniki Poznańskiej, Poznań, 2016
2. Dobrzański L.A.: Materiały inżynierskie z podstawami technologii procesów materiałowych., TOM1 i Tom2, wyd. 1, Wydawnictwo Naukowe PWN SA, Gliwice 2024
3. Adamiec P. i inni: Poradnik inżyniera. Spawalnictwo. Tom 1, Pod redakcją Jana Pilarczyka, Wyd. Naukowo-Techniczne, Warszawa, 2003
4. Adamiec P. i inni: Poradnik inżyniera. Spawalnictwo. Tom 2, Pod redakcją Jana Pilarczyka, Wyd. Naukowo-Techniczne, Warszawa, 2005

Additional:
The current articles presenting the showed subject matter of the joining technology.

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00