



COURSE DESCRIPTION CARD - SYLLABUS

Course name

The Soldering and Gluing [S1MiTPM1>LiK]

Course

Field of study

Materials and technologies for automotive industry

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

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

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Lecturers

Prerequisites

The basic knowledge from the range of engineering materials and manufacturing technology as well as chemistry, physics and materials science in 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

It's understanding the method of the solder and gluing as well as got thanks to him proprieties of the elements connections and their the influence on the structure and the propriety the materials use the automotive industry.

Course-related learning outcomes

Knowledge:

1. The student should name and describe the method of the solder and gluing applied in the automotive industry.
2. the student should characterize the proprieties of the material as well as made joins in dependence from the applied method solder and gluing applied in the automotive industry.

Skills:

1. The student is able to choose appropriate the method of the solder and gluing in depending on the required properties of the join as well as the used material in the automotive production.
2. The student is able to offer and choose the device to execution processes of solder or gluing used in the automotive production.
3. the student is able to design technological process of the solder and gluing selected elements applied in the automotive industry.

Social competences:

1. The student is active in analyzing and solving problems in a group.
2. the student is aware of the role of the method of the solder and gluing in the manufacturing technology of products in the automotive industry.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

The credit of lecture on the basis of a written answer consisting of 2 (two) - 6 (six) questions or test on e-Kursy PP platform, which realized at the end of semester.

Evaluation criteria: 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 instructions of the laboratory teacher.

Evaluation criteria: dst (3.0) ÷ dst+ (3.5) => 50.1 ÷ 70%; db (4.0) ÷ db+ (4.5) => 70.1 ÷ 90%; bdb (5.0) => 90.1 ÷ 100%

I get the credit from laboratories oneself, when all answers are classified on the positive assessment and and all report from exercises are received.

Programme content

- 1) The soldering and the gluing - definitions, kinds, methods.
- 2) The soldering and gluing applied to the iron alloys and non-ferrous alloys in the automotive industry.
- 3) The soldering and gluing of non-metallic materials in the automotive industry.
- 4) The devices and the instrumentation, which realized operation of the solder and gluing in the automotive production.
- 5) The producibility of elements from the viewpoint of the solder and gluing of elements in the automotive industry.
- 6) The control used in the processes of the solder and gluing applied in the automotive production.

Course topics

Lecture:

1. The basic notion from the soldering and gluing applied in the automotive industry.
2. The soldering and gluing of elements with iron and non-ferrous materials applied in the automotive production.
3. The soldering and gluing of elements with non-metallic materials applied in the automotive production.
4. The classification and characteristics of the devices for the solder and gluing applied in the automotive production.
5. The control used in the processes of the solder and gluing applied in the automotive production
6. The producibility, the ecology and the processes of the solder and gluing applied in the automotive industry.
7. The examples process of the solder and gluing of selected elements used in the automotive industry.

Laboratory:

- 1) The soldering and gluing - the valuation of wettability
- 2) The soft soldering
- 3) The hard soldering

- 4) The gluing - the thermoplastic glues
- 5) The gluing - the light- hardenable and chemi-hardenable glues
- 6) The soldering and gluing - the properties of joins and the surface kind and the joining method of elements.

Teaching methods

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

Bibliography

Basic:

1. Adamiec P. i inni: Poradnik inżyniera. Spawalnictwo. Tom 1, Pod redakcją Jana Pilarczyka, Wyd. Naukowo-Techniczne, Warszawa, 2003
2. Adamiec P. i inni: Poradnik inżyniera. Spawalnictwo. Tom 2, Pod redakcją Jana Pilarczyka, Wyd. Naukowo-Techniczne, Warszawa, 2005
3. Nowacki J., Chudziński M., Zmitrowicz P.: Lutowanie w budowie maszyn, Wyd. Naukowo-Techniczne, Warszawa, 2007
4. Godzimirski J. i inni: Tworzywa adhezyjne. zastosowanie w naprawach sprzętu technicznego, Wyd. Naukowo-Techniczne, Warszawa, 2010
5. Majewski D.: Lutowanie i klejenie. Poradnik dla praktyków, Wyd. KaBe, Krosno, 2024

Additional:

1. Jasieluk P.: Łączenie tworzyw sztucznych metodami spawania, zgrzewania, klejenia i laminowania, Wyd. KaBe, Krosno, 2004
2. Peta K. Ocena lutowanych połączeń w samochodowych wymiennikach ciepła za pomocą sztucznych sieci neuronowych, Wyd. Politechniki Poznańskiej, Poznań, 2020
2. Aktualny artykuły prezentujące przedstawianą tematykę lutowania i klejenia

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	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)	20	1,00