



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Testing and Attestation of Working Machines [S2MiBP1-MR>BiAMR]

### Course

Field of study

Mechanical and Automotive Engineering

Year/Semester

2/3

Area of study (specialization)

Heavy-duty Machines

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

30

Projects/seminars

0

### Number of credit points

3,00

### Coordinators

dr inż. Konrad Włodarczyk

konrad.wlodarczyk@put.poznan.pl

### Lecturers

### Prerequisites

1. Knowledge: Has basic knowledge of physics and metrology regarding the main measurement methods physical quantities. 2. Skills: Can use basic equipment for rope measurements and measurements electrical quantities. 3. Social competences. Has basic communication skills in a group

### Course objective

Getting acquainted with the methods of testing machines.

### Course-related learning outcomes

Knowledge:

Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment.

Has general knowledge of standardization, EU recommendations and directives, national, industry and international standards systems, and industrial standards.

Has extended knowledge of the life cycle of machines, the principles of operation of working machines and destructive processes occurring during operation, such as tribological wear, corrosion, surface fatigue and volumetric aging of the material.

### Skills:

He can correctly select the optimal material and its processing technology for typical parts of working machines, taking into account the latest achievements in material engineering.

He can develop a technical description, offer and design documentation for a complex machine from a selected group of machines.

Can plan and carry out experimental research of specific processes taking place in machines and routine tests of a working machine or a vehicle from a selected group of machines.

### Social competences:

It is ready to fulfill social obligations, inspire and organize activities for the benefit of the social environment.

Is willing to think and act in an entrepreneurial manner.

Is ready to fulfill professional roles responsibly, taking into account changing social needs, including:

- developing the professional achievements,
- maintaining the ethos of the profession,
- observing and developing the rules of professional ethics and acting towards the observance of these rules.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

For discussion, ongoing preparation and activity in class. Written credit. Compulsory individual reports on laboratory activities. Final credit of laboratory classes.

### Programme content

The importance of the research of machines for the development of their design and improvement of functionality, reliability and safety. Basic measurements for machine testing. Geometry, stress measurements i deformations, temperatures. Durability and reliability tests. Research in the aspect of safety. Legal norms regulating machine testing procedures.

### Course topics

none

### Teaching methods

1. Lecture with multimedia presentation
2. Exercises - solving problems

### Bibliography

#### Basic

1. Kanafojski C., Karwowski T.: Teoria i konstrukcje maszyn rolniczych. Wyd. PWRiL, Warszawa, 1972.
2. Gach S., Miszczak M., Waszkiewicz C.: Projektowanie maszyn rolniczych. Wyd. SGGW-AR, Warszawa, 1989.
3. Brach J.: Koparki jednonaczyniowe. Wyd. WAT, Warszawa, 1985.
4. Brach J.: Maszyny ciągnikowe do robót ziemnych. Wyd. WNT, Warszawa, 1986.

#### Additional

1. Dudczak A.: Koparki. Teoria i projektowanie. Wyd. WNT, Warszawa, 2000.
2. Konopka S.: Podstawy budowy i eksploatacji maszyn inżynieryjno-budowlanych. Wyd. WAR, Warszawa, 2002.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00