



## COURSE DESCRIPTION CARD - SYLLABUS

### Course name

Technical and legal standards in the construction, operation and trade of working machines [S2MiBP1-MR>NTiP]

### 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

0

Tutorials

15

Projects/seminars

0

### Number of credit points

2,00

### Coordinators

Jan Radniecki

### Lecturers

### Prerequisites

The student has basic engineering knowledge about design, development and testing research, manufacturing methods and quality control of machines delivered to the market. He knows the basic safety requirements for the use and operation of machines. The student has the ability to search for technical and legal information in public databases. Can interpret this information and draw practical conclusions for the implementation of tasks within the framework of economic activity.

### Course objective

To familiarize students with the applicable EU legal requirements - implemented into national law - in the field of safety of products supplied by the manufacturer to the EU single market. Presentation of mandatory procedures for demonstrating compliance of the delivered products with EU directives and the national conformity assessment system. Presentation of the possibilities and rules of using the PN, EN and ISO standards to confirm the compliance of the product with EU requirements.

### 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 standards for working machines in the field of methods of calculating and testing machines, safety, including road safety, environmental protection as well as mechanical and electrical interface.

Skills:

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

Can perform a medium complex design of a working machine or its assembly using modern CAD tools, including tools for spatial modeling of machines and calculations using the finite element method.

Can design the technology of exploitation of a selected machine with a high degree of complexity.

Social competences:

Is ready to recognize the importance of knowledge in solving cognitive and practical problems, and to consult experts in the event of difficulties in solving the problem on its own.

It is ready to initiate actions for the public interest.

Is willing to think and act in an entrepreneurial manner.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Completion of the course based on a conversation on the practical use of EU standards and machinery directive.

### Programme content

System for assessing the compliance of products with EU law, harmonization of standards and technical requirements at the EU level, analysis of threats and assessment of risks caused by machines to life, health and the environment.

### Course topics

none

### Teaching methods

Problem lecture with a multimedia presentation, discussion on the identification and verification of standardization requirements for selected, for example, machines.

### Bibliography

Basic

1) Dyrektywa 2006/42/WE w sprawie maszyn (Dziennik Urzędowy Unii Europejskiej OJ L 157/24).

2) Rozporządzenie Ministra Gospodarki z dn. 21 października 2008 w sprawie zasadniczych wymagań dla maszyn (Dz. U. nr 109/2008 poz. 1228 z późn. zm).

3) Przewodnik dotyczący stosowania dyrektywy 2006/42/WE w sprawie maszyn. Redakcja Ian Fraser. Wyd. Komisja Europejska - Przedsiębiorstwa i przemysł. 2010.

Additional

1) Wybrane normy krajowe PN, europejskie EN i międzynarodowe ISO z zakresu bezpieczeństwa maszyn.

2) Wymagania bezpieczeństwa dla maszyn umieszczanych na rynkach Unii Europejskiej i na rynku Polski. Informator dla polskich podmiotów gospodarczych. Ministerstwo Gospodarki, Pracy i Polityki Społecznej. Warszawa 2003.

### 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