



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Passing Project [S2MiBP1-MR>PP]

### Course

Field of study

Mechanical and Automotive Engineering

Year/Semester

1/2

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

0

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

4

### Number of credit points

5,00

### Coordinators

dr hab. inż. Jarosław Selech prof. PP  
jaroslaw.selech@put.poznan.pl

### Lecturers

### Prerequisites

Has a basic knowledge of the life cycle of machines. It has an orderly, theoretically founded, knowledge covering key issues useful in the design of working machines. He knows the rules rational design of working machines. Can design selected groups of machines working systems - especially drive and working systems made of components available on the market). He can use computer programs supporting the design process Is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, i related responsibility for the decisions made.

### Course objective

Practical use of knowledge gained in the process of previous education. Capture ability to independently solve problems in the field of study and specialization, design of equipment and technological lines for industry, construction of working machines and methods their research and operation. Ability to calculate the strength of machines and their structures.

### Course-related learning outcomes

Knowledge:

He knows the modern engineering methods of computer graphics and the theoretical basis of engineering calculations using the finite element method.

Has extended knowledge of modern construction materials such as carbon plastics, composites, ceramics, in terms of their construction, processing technology and applications.

Has a general knowledge of the principles and methods of constructing working machines, in particular the methods of functional and strength calculations, mathematical optimization of mechanical structures and modeling of machine structures in 3D systems.

#### 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.

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.

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

#### Social competences:

He is ready to critically assess his knowledge and received content.

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:

Assessment of the completed project.

### Programme content

principles of engineering design, machine construction technology, manufacturing technologies,

### Course topics

Mastering the principles of independent solving of engineering tasks and preparation for the implementation of a master's thesis in the field of Working Machines.

### Teaching methods

Consultations with the lecturer.

### Bibliography

Basic

Kłos Z. Rozprawy naukowe. Wydawnictwo Politechniki Poznańskiej, 2011

Additional

### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	4	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	121	4,00