



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to Engineering

### Course

Field of study

Management Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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### Prerequisites

Knowledge of mathematics and physics in high school. Ability to solve simple problems in mathematics and physics. Group work, interest in technology.

### Course objective

To familiarize students with the basic problems associated with the development of technology, make aware of the logic of changes in manufacturing techniques and human relationships with technology and the environment. The systemic nature of these compounds is emphasized. Familiarizing students with modern trends in the development of technology and technology as well as the organization of human work aims to develop practical skills in identifying, understanding and describing contemporary techniques and technologies used in mechanical engineering).



### Course-related learning outcomes

#### Knowledge

The student defines the life cycle of machines, including the stages of design, production, operation, and disposal [P6S\_WG\_14].

The student describes the life cycle of industrial products, covering stages from concept to market withdrawal [P6S\_WG\_15].

The student names typical industrial technologies and characterizes their significance in the context of machine construction and operation [P6S\_WG\_17].

The student recognizes basic principles of safety and occupational hygiene in the machine-building industry [P6S\_WG\_18].

#### Skills

The student plans and conducts a critical analysis of technological processes in machine production, considering aspects of efficiency and quality [P6S\_UW\_13].

The student identifies design tasks related to the construction and operation of machines and solves simple design problems in this field [P6S\_UW\_14].

#### Social competences

The student is aware of the importance of non-technical aspects of engineering activities, including environmental impact and ethical aspects of technology [P6S\_KR\_01].

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

- a) in the scope of exercises: ongoing checking of knowledge and skills during calculation and graphic exercises,
- b) in the scope of lectures: based on a discussion of the material learned in previous lectures; bonus attendance at lectures.

Summative rating:

- a) in the scope of exercises: based on the results of the average partial grades of the forming grade
- b) in the scope of lectures: an exam in the form of a written test

### Programme content

Elements of the history of technology against the backdrop of human evolution and the development of societies. Techniques and technologies regarding materials (among others: plastic forming, casting, machining, heat treatment and thermo-chemical processes). Connections used in machine construction, principles of construction and functioning of machine components (bearings, gears, clutches, brakes). Techniques and technologies related to energy (sources, methods of transmission and transformation). Information techniques and technologies. Selected problems of modern technical civilization. Ethical problems of the user and the creator of the technique.



## Teaching methods

Lectures with multimedia presentation

Accounting and designing exercises on topics related to lectures.

## Bibliography

### Basic

1. Wprowadzenie do techniki, Edwin Tytyk, Marcin Butlewski, Wyd. Politechniki Poznańskiej, Poznań, 2008
2. Wprowadzenie do techniki - materiały do ćwiczeń i wykładów, Zbigniew Tomaszewski, Wyd. Politechniki Poznańskiej, Poznań, 2002
3. Encyklopedia technik wytwarzania stosowanych w przemyśle maszynowym, Tom I, Jerzy Erbel (red.), Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2001
4. Encyklopedia technik wytwarzania stosowanych w przemyśle maszynowym, Tom II, Jerzy Erbel (red.), Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2001

### Additional

1. Technologia maszyn, Stefan Okoniewski, WSiP, Warszawa, 1999
2. Powszechna historia techniki, Bolesław Orłowski, Oficyna Wydawnicza Mówią Wieki, Warszawa, 2010
3. Dawne wynalazki, Peter James, Nick Thorpe, Świat Książki, Warszawa, 1997

## Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	80	3,0

<sup>1</sup> delete or add other activities as appropriate