



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to Technology

### Course

Field of study

Safety Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

12

Laboratory classes

Other (e.g. online)

Tutorials

10

Projects/seminars

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

Ph.D., D.Sc., Eng. Marcin Butlewski, University

Professor

Responsible for the course/lecturer:

Mail: marcin.butlewski@put.poznan.pl

Phone: 61 665 33 77

Faculty of Engineering Management

ul. J. Rychlewskiego 2, 60-965 Poznań

### 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 industry and services.



### Course-related learning outcomes

#### Knowledge

knows the issues of technical safety, safety systems, occupational health and safety as well as threats and their effects [P6S\_WG\_02]

knows the issues of the life cycle of products, devices, facilities, systems and technical systems [P6S\_WG\_06]

knows the issues of quality engineering in relation to products and processes [P6S\_WG\_07]

knows the issues of management and organization as well as marketing and logistics in the context of security engineering [P6S\_WG\_08]

knows the basic methods, techniques, tools and materials used in preparation for conducting scientific research and solving simple engineering tasks with the use of information technology, information protection and computer support [P6S\_WK\_04]

#### Skills

is able to properly select sources and information derived from them, make an evaluation, critical analysis and synthesis of this information [P6S\_UW\_01]

can see system and non-technical aspects in engineering tasks, as well as socio-technical, organizational and economic [P6S\_UW\_03]

can use analytical, simulation and experimental methods to formulate and solve engineering tasks, also with the use of information and communication methods and tools [P6S\_UW\_04]

can make a critical analysis of the way of functioning and assess - in connection with Safety Engineering, the existing technical solutions, in particular machines, devices, facilities, systems, processes and services [P6S\_UW\_06]

is able to design, using appropriate methods and techniques, an object, system or process that meets the requirements of safety engineering [P6S\_UW\_07]

is able to identify changes in requirements, standards, regulations and technical progress and the reality of the labor market, and on their basis determine the need for supplementing knowledge [P6S\_UU\_01]

#### Social competences

is aware of the recognition of the importance of knowledge in solving problems in the field of safety engineering and continuous improvement [P6S\_KK\_02]

is aware of the understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for decisions made [P6S\_KK\_03]

### 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 for quiz (at lecture)

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. Techniques and technologies in production, distribution, transport and other logistic processes. 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



4. Butlewski, M. (2012). The issue of product safety in contemporary design. Safety of the System, Technical, Organizational and Human Work Safety Determinants. Red. Szymon Salamon. Wyd. PCzést. Częstochowa, 1428-1600.

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	90	3,5

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