



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Product ergonomics and industrial design

### Course

Field of study

Safety Engineering

Area of study (specialization)

Ergonomics and Work Safety

Level of study

Second-cycle studies

Form of study

part-time

Year/Semester

II/3

Profile of study

general academic

Course offered in

polish

Requirements

elective

### Number of hours

Lecture

10

Tutorials

-

Laboratory classes

10

Projects/seminars

10

Other (e.g. online)

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr hab. Eng. Marcin Butlewski

Department of Ergonomics Applications

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Responsible for the course/lecturer:

### Prerequisites

The student has basic knowledge in the field of ergonomics



## Course objective

The aim of the course is to teach students how to use methods of ergonomic product designing and industrial design

## Course-related learning outcomes

### Knowledge

knows the issues of ergonomics, macroergonomics and occupational safety as well as design knows the issues of ergonomics, macroergonomics and occupational safety as well as design methodologies including safety principles in product design

knows issues related to the area of ergonomics and occupational safety, in particular regarding the safety and ergonomics of products

knows design issues in relation to products and manufacturing processes

### Skills

is able to use research, analytical, simulation and experimental methods to formulate and solve engineering tasks, also using information and communication methods and tools in product design

is able to critically analyze the functioning and evaluate - in conjunction with Safety Engineering existing technical solutions, in particular machinery, equipment, objects and various types of artifacts

can plan and carry out experiments, including computer measurements and simulations, interpret obtained results and draw conclusions about products

is able to identify changes in requirements, standards, regulations, technical progress and the reality of the labor market, and on their basis determine the need to supplement own and other knowledge in order to produce products at a given level of ergonomic quality

### Social competences

is aware of the recognition of cause-and-effect relationships in achieving the set goals and ranking the significance of alternative or competitive projective tasks

is aware of recognizing the importance of knowledge in solving problems in the field of security engineering and continuous improvement while creating new solutions

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment - current assessment of tasks assigned, As part of the project, assessment of individual stages.

Assessment summarizing the ability to apply methods in practice

## Programme content

The concept of product ergonomics and ergonomics. Product evaluation criteria. Ergonomic design. Standards in ergonomic design - practical use of ISO 6385 and standards from the group 1005.



Application of tools in the area of ergonomic product design, requirements analysis - Systemic Requirement Analysis, morphological analysis - Relationships, the house of quality for the purposes of ergonomic product, ergonomic TRIZ. The concept of usability and features that affect it. Designing for individual groups of recipients. Universal, immersive (inclusive) design. Gerontechnics - geroneergonomics. Pattern design and shots used in it. Persuasive design. Entographic design.

### Teaching methods

Classical problem method, Case study method

### Bibliography

Basic

Jabłoński J. (red.), Ergonomia produktu. Ergonomiczne zasady projektowania produktów, Wyd. Politechniki Poznańskiej, Poznań, 2006

Butlewski M., Projektowanie i ocena wyrobów. - Poznań: Wydaw. Politechniki Poznańskiej, 2013. - 106 s.

Butlewski M., Heuristic Methods Aiding Ergonomic Design, Universal Access in Human-Computer Interaction. Design Methods, Tools, and Interaction Techniques for eInclusion, Lecture Notes in Computer Science Volume 8009, 2013, pp 13-20

Tytek E., Projektowanie ergonomiczne, Wydawnictwo Naukowe PWN, Warszawa, 2001

Butlewski M., Projektowanie ergonomiczne wobec dynamiki deficytu zasobów ludzkich / Marcin Butlewski (WIZ) / red. Krystyna Bubacz - Poznań, Polska : Wydawnictwo Politechniki Poznańskiej, 2018 - 255 s.

Additional

Butlewski M., Tytek E., Inżynieria ergonomiczna dla aktywizacji osób starszych, Praca i Zabezpieczenie Społeczne, 50 - 59

Butlewski, M., Jasiulewicz-Kaczmarek, M., Misztal, A., Sławińska, M., Design methods of reducing human error in practice, (2015) Safety and Reliability: Methodology and Applications - Proceedings of the European Safety and Reliability Conference, ESREL 2014, pp. 1101-1106.

Norman, D. (2013). The design of everyday things: Revised and expanded edition. Basic Books (AZ).

Norman, D. A. (2004). Emotional design: Why we love (or hate) everyday things. Basic Civitas Books.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	3,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	30	1,5

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