



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Heuristic methods in ergonomic 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

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

10

Laboratory classes

Other (e.g. online)

Tutorials

10

Projects/seminars

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

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

Responsible for the course/lecturer:

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## Prerequisites

The student has basic knowledge in the field of ergonomics

## Course objective

The aim of the course is to transfer knowledge and skills related to ergonomic design, in particular methods of solving problems in the field of ergonomics

## Course-related learning outcomes

### Knowledge

knows the issues of ergonomics, macroergonomics and occupational safety as well as ergonomic design methodology [P7S\_WG\_02]

knows the issues related to the area of ergonomics and occupational safety in the area of ergonomic design [P7S\_WG\_03]

knows the issues of design heuristics in relation to products and processes [P7S\_WG\_07]

### Skills

is able to see and formulate systemic and non-technical as well as socio-technical, organizational and economic aspects in engineering tasks [P7S\_UW\_03]

is able to use research, analytical, simulation and experimental methods to formulate and solve engineering tasks, also using information and communication methods and tools [P7S\_UW\_04]

is able to plan and carry out experiments, including computer measurements and simulations, interpret obtained results and draw conclusions [P7S\_UO\_01]

### 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 design tasks [P7S\_KK\_01]

is aware of the understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions made [P7S\_KK\_03]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment - ongoing assessment of the tasks assigned,

Assessment summarizing the ability to apply methods in practice

## Programme content

Ergonomic design and its methodology. Characteristics of Heuristic Methods. Criteria for assessing solutions. Standards in ergonomic design. The use 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 an ergonomic product, ergonomic TRIZ. Persona in ergonomic design. Multi-criteria decision making models in ergonomic 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

Tytyk 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., Tytyk 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	75	3,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	45	2,0

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