



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ergonomics in product design

### Course

Field of study

Year/Semester

Safety Engineering

2/3

Area of study (specialization)

Profile of study

Integrated Security Management of the Organization

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

part-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

10

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

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

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Faculty of Engineering Management

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### Prerequisites

The student has basic knowledge in the field of ergonomics

### Course objective

The aim of the course is to provide the ability to use the methods of ergonomic shaping of products.

### Course-related learning outcomes

Knowledge

has basic knowledge of the life cycle of industrial products and everyday use [P6S\_WG\_13]



knows the issues of ergonomics, macroergonomics and occupational safety as well as design methodology taking into account safety rules, necessary to shape solutions and design products, [P7S\_WG\_02]

- knows the issues of risk analysis, hazards and their effects in the work environment used in the design of products, [P7S\_WG\_05]

- knows the issues of the life cycle of devices, facilities and technical systems in the context of ergonomic design, [P7S\_WG\_06]

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

#### Skills

- can see and formulate system and non-technical aspects in engineering tasks, as well as socio-technical, organizational and economic aspects, [P7S\_UW\_03]

- can use research, analytical, simulation and experimental methods to formulate and solve engineering tasks, also with the use of information and communication methods and tools in ergonomic product design, [P7S\_UW\_04]

#### Social competences

- is aware of the perception of cause-and-effect relationships in the implementation of the set goals and the importance of the importance of alternative or competitive tasks. [P7S\_KK\_01]

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment - ongoing assessment (on a scale of 2 to 5 points) of the assigned tasks,

Assessment summarizing the ability to apply the methods in practice.

#### Programme content

The concept of ergonomics and ergonomics of the product. Product evaluation criteria. Ergonomic design. Standards in ergonomic design - practical use of ISO 6385 standards and group 1005 standards. Application of tools in the area of ergonomic product design, analysis of requirements - Systemic Requirement Analysis, morphological analysis - Relationships, quality house for ergonomic product purposes, TRIZ ergonomic.

#### Teaching methods

Classic problem method, Case study method. Case method

Idea exchange (brainstorming)

#### Bibliography

Basic

1. Jabłoński J. (ed.) (2006), Product ergonomics. Ergonomic principles of product design, Poznań



University of Technology Publishing House, Poznań. 2. Butlewski M. (2013), Design and evaluation of products, Publishing House of the Poznań University of Technology, Poznań.

3. Butlewski M. (2013), 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, pp. 13-20.

4. Tytyk E. (2001), Ergonomic design, Polish Scientific Publishers PWN, Warsaw. 5. Butlewski M. 2018), Ergonomic design in the face of the dynamics of the deficit of human resources, Publishing House of the Poznań University of Technology, Poznań.

#### Additional

1. Butlewski M., Tytyk E. (2015), Ergonomic engineering for activation of the elderly, Work and Social Security, 8, 50 - 59.

2. Butlewski, M., Jasiulewicz-Kaczmarek, M., Misztal, A., Sławińska, M. (2015), Design methods of reducing human error in practice, Safety and Reliability: Methodology and Applications - Proceedings of the European Safety and Reliability Conference, ESREL 2014, pp. 1101-1106.3. Norman D. (2013), The design of everyday things: Revised and expanded edition. Basic Books. 4. Norman DA (2004), Emotional design: Why we love (or hate) everyday things. Basic Civitas Books.

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	10	0,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	15	0,5

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