



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ergonomics and product design

Course

Field of study

Safety Engineering

Area of study (specialization)

Integrated Management of Safety in Organization

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

0

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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

Responsible for the course/lecturer:

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Faculty of Engineering Management

Institute of Safety and Quality Engineering

Department of Ergonomics Applications

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 design.

Course-related learning outcomes

Knowledge

- knows the issues of ergonomics, macroergonomics and occupational safety as well as design methodologies taking into account the safety principles necessary to shape solutions,
- knows the issues of risk analysis, threats and their effects in the work environment used in product design,
- knows the issues of the life cycle of devices, facilities and technical systems in the context of ergonomic design,
- knows the issues of ergonomic design in relation to products and processes,

Skills

- is able to see and formulate systemic and non-technical as well as socio-technical, organizational and economic aspects in engineering tasks,
- 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 ergonomic product design,

Social competences

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

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment - current assessment (on a scale of 2 to 5 points) of the tasks ordered.

Assessment summarizing the ability to apply methods in practice.

Programme content

The concept of product ergonomics and ergonomic design. Product evaluation criteria. Ergonomic design within different domains. 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 - Zwizki, the house of quality for the purposes of ergonomic quality of a product, ergonomic TRIZ.

Teaching methods

Classical problem method, Case study method.

Bibliography



Basic

1. Jabłoński J. (red.) (2006), Ergonomia produktu. Ergonomiczne zasady projektowania produktów, Wydawnictwo Politechniki Poznańskiej, Poznań.
2. Butlewski M. (2013), Projektowanie i ocena wyrobów, Wydawnictwo Politechniki Poznańskiej, 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), Projektowanie ergonomiczne, Wydawnictwo Naukowe PWN, Warszawa.
5. Butlewski M. (2018), Projektowanie ergonomiczne wobec dynamiki deficytu zasobów ludzkich, Wydawnictwo Politechniki Poznańskiej, Poznań.

Additional

1. Butlewski M., Tytyk E. (2015), Inżynieria ergonomiczna dla aktywizacji osób starszych, Praca i Zabezpieczenie Społeczne, 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 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	30	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for classes/tutorials, preparation for tests, project preparation) ¹	15	0,5

¹ delete or add other activities as appropriate