



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ergonomics

### Course

Field of study

Logistic

Area of study (specialization)

Level of study

First-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

16

Laboratory classes

12

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

### Prerequisites

Student has basic knowledge of processes and conditions existing in work environment, knows the basic logistic processes and rules of their organization, understands the basic concepts of organization and management sciences and the basics of work safety management.

### Course objective

Providing students with theoretical and practical knowledge in the field of shaping safe and ergonomic working conditions, especially in enterprises–industrial and service enterprises in manufacturing and logistics processes. To teach measuring techniques for assessing the most important ergonomic factors. Developing skills of critical observation of work processes in terms of safety and ergonomics, as well as the ability to design changes in the design of equipment and work organization, ensuring ergonomics and safety.



## Course-related learning outcomes

### Knowledge

#### Student:

- knows the basic relationships necessary to understand the non-technical conditions of engineering activities and the basic principles of occupational health and safety in logistics [P6S\_WK\_08]

### Skills

#### Student:

- can see in engineering tasks systemic and non-technical aspects as well as socio-technical, organizational and economic [P6S\_UW\_04]
- can prepare the means of work necessary to work in an industrial environment and knows the safety principles associated with this work, including safety problems in logistics [P6S\_UW\_05]
- can choose the right tools and methods to solve the problem within logistics and supply chain management, and to use them effectively [P6S\_UO\_02]
- can identify changes in requirements, standards, regulations, technical progress and the reality of the labor market, and based on them determine the need to supplement knowledge [P6S\_UU\_01]

### Social competences

#### Student:

- is aware of the critical assessment and perception of cause-and-effect relationships in achieving the set goals and ranking the significance of tasks [P6S\_KK\_01]
- is aware of initiating activities related to the formulation and transfer of information and cooperation in society in the field of logistics [P6S\_KO\_02]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Knowledge acquired on lectures is verified by two 45-minute examinations realized on 7 of 15 lectures. Each examination consists with 10-15 questions (closed and open), estimated differently.

Threshold attest: 50% points.

Laboratory classes: Attest examination: oral answers, open questions, multi-choice test and activity on classes. Threshold attest: 50% points.

## Programme content

### Basic contents of lectures:

The origin of ergonomics against the backdrop of the development of technology and science. Components sciences and the nature of ergonomics. Ergonomics and health and safety - economic aspects. Human system - technical object and its surroundings. Interpretation of the system as a work-place. The purpose and scope of ergonomic activity. Contemporary trends in ergonomic research. Ergonomic diagnosis methods. Analysis of physical workloads and body heat management. Analysis of work-related psychological burdens. Principles of load optimization. Perception and information processing processes. Selection rules for signaling and control devices. Shaping the spatial parameters of the workplace and manual machines and tools based on anthropometric data. Assessment and shaping



of the working environment (mechanical vibrations, noise, microclimate, lighting, harmful radiation, air pollution). Principles of ergonomic design. Examples of ergonomic design of machining, assembly, dispatching and computer stations. Ergonomics of the elderly and the disabled.

Basic contents of laboratory exercises:

- Physical fitness of the body and BMI.
- Human anthropometric features
- Visual work in changing lighting conditions.
- Absolute hearing threshold.
- Criteria for seat selection for the user.
- Acoustic conditions of the room
- Selected parameters electric lighting.
- Feeling of mechanical vibrations.
- Simple and complex reactions.
- Sound and visual stimuli and making mistakes.
- Selected psychophysical possibilities.

### Teaching methods

Lectures with multimedia presentation and discussion of practical solutions

Laboratory exercises with the use of apparatus for ergonomic measurements.

### Bibliography

Basic

1. Horst W. (red), Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy, Wyd. Politechniki Poznańskiej, Poznań, 2011
2. Olszewski J., Podstawy ergonomii i fizjologii pracy. Wyd. Akademii Ekonomicznej, Poznań, 1997
3. Tytyk E., Butlewski M. Ergonomia w technice. Wyd. Politechniki Poznańskiej, Poznań, 2011
4. Tytyk E., Projektowanie ergonomiczne, Wyd. PWN, Warszawa 2001
5. Wejman M., Diagnozowanie środowiska pracy, Wyd. Politechniki Poznańskiej, Poznań 2012

Additional

1. Górska E., Ergonomia. Projektowanie, diagnoza, eksperymenty. Oficyna Wydawnicza Politechniki Warszawskiej, 2002
2. Jabłoński J. (red.), Ergonomia produktu. Ergonomiczne zasady projektowania produktów, Wydawnictwo Politechniki Poznańskiej, Poznań, 2006
3. Koradecka D., (red), Bezpieczeństwo pracy i ergonomia, Wyd. CIOP, Warszawa, 1999
4. Nowak E., Atlas antropometryczny populacji polskiej, Wydawnictwo Instytutu Wzornictwa Przemysłowego, Warszawa, 2000
5. Tytyk E., Drgania mechaniczne i hałas w ujęciu inżynierii ergonomicznej. Wyd. Politechniki Poznańskiej, Poznań 2021 (Open Access)
6. Norms and low acts recommended on the classes



### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	28	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests and exam) <sup>1</sup>	97	4,0

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