



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

ERGONOMICS

### Course

Field of study

Automatic Control and Robotics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

practical

Course offered in

university-wide

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

prof. dr hab. inż. Edwin Tytyk

PUT, Faculty of Engineering Management

Institute of Safety and Quality Engineering

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Responsible for the course/lecturer:

### Prerequisites

Student has consolidate knowledge from natural science, mathematics and physics, taught in secondary school

### Course objective

Presenting basic issues concerning ergonomics in modern companies, as well as automation and robotics engineering and in everyday private life. Giving patterns for solving problems concerning the formation of conditions at work with use of, for example, diagnostics and reduction of occupational risk and designing ergonomic solutions. Giving the examples of ergonomic solutions designing: work stands by production machines and by computers. Presenting relations between technique, human well-being, ecology, economy and sociology.



## Course-related learning outcomes

### Knowledge

Student knows and understand the influence of the automation and robotics engineering to natural environment. Student has the ordered knowledge necessary for the understanding conditions exceeding beyond technical aspects, knows and understands the principles of Occupational Safety and Health which refer to the automation and robotics engineering.

### Skills

Student is aware - by formulating and solving tasks concerned the automation and robotics engineering - take into account their beyond technical aspects, i.e. environmental, economy and law.

### Social competences

Student is aware of the importance and comprehends of non-technical aspects of the automation and robotics engineering and their consequences, including the influence to the natural environment, work environment and the responsibility for decisions he makes, cooperate in activities for social and natural environments.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written multi-choice test after full cycle of lectures.

Attestation threshold: over 50% corrected answers.

Checking of attendance in lectures.

## Programme content

The genesis of the ergonomics issue on science and technology development context. Component sciences and character of ergonomics. Systems human-to-technical object as an example of a workstation. The assessment of the physical workload and thermal managing in human body. Processes of perception and transformation of information and the assessment of the psychical workload. The principles of choose a signalling and controlling device. Anthropometric data in designing machines and workspaces. The examples of technical and organizational solutions improving the ergonomic quality of machines and work conditions. The principle of optimization of burdens. Apparatus measurements and assessment of material parameters of the work environment (vibrations, noise, lighting, thermal conditions, air pollutions, harmful radiation, etc.). Examples of ergonomic designing of work stations: working, assembling, dispatching, computerized. The new ergonomic problems arising by applying a new technologies. Contemporary trends in ergonomic researches. Ergonomics for disabled people.

## Teaching methods

Lectures with multimedial presentations.

Initiation discussions on themes connected with lecture subject.

## Bibliography



Basic

1. Tytyk E., Ergonomia - pojęcia podstawowe. Tom 1. Pakietu edukacyjnego dla uczelni wyższych pt. Nauka o pracy - bezpieczeństwo, higiena, ergonomia. Red. naukowa: prof. Danuta Koradecka, Wydawnictwo Centralnego Instytutu Ochrony Pracy, Warszawa, 1999
2. Tytyk E., Butlewski M., Ergonomia w technice; Wydawnictwo Politechniki Poznańskiej, Poznań, 2011
3. Tytyk E., Bezpieczeństwo i higiena pracy, ergonomia i ochrona własności intelektualnych. Wydawnictwo Politechniki Poznańskiej, Poznań, 2017
4. Tytyk E., Projektowanie ergonomiczne, Wydawnictwo Naukowe PWN, Warszawa, 2001
5. Wejman M., Diagnozowanie środowiska pracy. Wydawnictwo Politechniki Poznańskiej, Poznań, 2012

Additional

1. Górka E., Tytyk E., Ergonomia w projektowaniu stanowisk pracy. Podstawy teoretyczne; Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998
2. Górka E., Diagnoza ergonomiczna stanowisk pracy. Oficyna Wydawnicza Politechniki Warszawskiej, 1998
3. Horst W., Ryzyko zawodowe na stanowisku pracy, Cz. I. Wyd. Politechniki Poznańskiej, Poznań, 2004
4. Nowak E., Atlas antropometryczny populacji polskiej; Wydawnictwo Instytutu Wzornictwa Przemysłowego, Warszawa, 2000
5. Koradecka D. (red.), Bezpieczeństwo pracy i ergonomia (2 tomy); Wydawnictwo Centralnego Instytutu Ochrony Pracy, Warszawa, 1999

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	27	2,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	12	1,0

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