



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human factor in safety

### 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

elective

### Number of hours

Lecture

10

Laboratory classes

0

Other (e.g. online)

0

Tutorials

10

Projects/seminars

10

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Małgorzata Sławińska, Ph.D, D.Sc, Eng.

Professor at Poznan University of Technology

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Responsible for the course/lecturer:

Tomasz Ewertowski, Ph.D, Eng.

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### Prerequisites

The student has basic knowledge about safety and hygiene at work, ergonomics and psychology. The student is able to recognise correlations and cause-and-effect dependencies occurring in widely understood safety.

### Course objective

Recognition and understanding basic theoretical aspects and practical rational formation of optimal work conditions. Acquiring knowledge and skills in improvement of work organization, prevention of occupational diseases and accidents at work.

### Course-related learning outcomes

Knowledge

- knows the essence of connection of human with ergonomics and safety of work,

- knows matters describes costs of accidents and structure of insurance systems, in particular in reference to law regulations act on ergonomic requirements and safety of work matters,



- knows matters of risk analysis range, identification of danger and its consequences for people in work environment;

#### Skills

- is able to recognize and form in engineering tasks system aspects and non-technical skills, as well as social and technical, organizational, and economic,

- is able to use testing, analytical, simulation and experimental methods for solving engineering tasks, also with use of methods and information and communication devices,

- is able to prepare and present problems that fit within ergonomics and occupational safety by means of properly selected means,

- is able to identify modification of requirements, standards, regulations, technical development, reality of label market and base on this completing its own knowledge as well as others;

#### Social competences

- is aware of importance of knowledge for effectively resolve safety engineering problems and provide continuous improvement,

- is aware of the understanding of non-technical aspects and results of engineering activities including environmental impact and associated with it decisions-making,

- is aware of need of professional behaviour, observe work ethics rights and respect for variety of opinions and cultures.

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

Learning outcomes presented above are verified as follows:

##### Evaluation:

- tutorials: evaluation of the reports from completed classes and evaluation of self-study task,

- project: evaluation of progress in project task realization ( compliance with agreed schedule of project task realization schedule) and activity during classes;

##### Summative evaluation:

- tutorials: the average marks from report preparation,

- in terms of project courses: project appraisal with taking into account assesses the progress in realization of project task and activity during project realization,

- lectures: written examination in a form of test where at least one answer is right (scores 0 or 1) or written answer for open questions ( scores 0 to 3); the student received a credit after reached more than 51% of points available.

#### Programme content

Essence of safety and preserving life. Human factor as determinant of work accidents appearance.

Organisational culture and safety culture. Accident indicators statement with focus on prevention.

Unreliability of human factor in safety of work. Cognitive psychology elements. Psychology mechanisms



of errors caused by human. Systems analysis. Type of risks and way of counteracting named: phenomenon compensation risk. The application in practice the knowledge about dependability of a human. Role of a man in assurance of technical and social systems dependability. Ergonomic engineering in improvement of work system.

### Teaching methods

- lecture: problem lecture with elements of collecting presumptions and solving the issue phase,
- classes: Round Table and Panel method,
- project: multilevel cognitive task.

### Bibliography

#### Basic

1. Sławińska M., (2012), *Niezawodność człowieka w interakcji z procesem przemysłowym*, Wydawnictwo Politechniki Poznańskiej, Poznań.
2. Dahlke G. (2013), *Zarządzanie bezpieczeństwem pracy i higieną pracy*, Wydawnictwo Politechniki Poznańskiej, Poznań.
3. Szopa T. (2016), *Niezawodność i bezpieczeństwo*, Oficyna Wydawnicza Politechniki Poznańskiej, Warszawa.
4. Sadłowska-Wrzesińska J., Lewicki L. (2018), *Podstawy bezpieczeństwa i zdrowia w pracy*, Wyd. WSL, Poznań.
5. Wejman M. (2012), *Higiena pracy*, Wyd. Politechniki Poznańskiej, Poznań.
6. PN-ISO 45001:2018-06, *Systemy zarządzania bezpieczeństwem i higieną pracy. Wymagania i wytyczne stosowania*, PKN, Warszawa.

#### Additional

1. Górny A., Sławińska M., Sobczak W. (2016), *Ocena kompetencji jako narzędzie zapewnienia bezpieczeństwa w przedsiębiorstwie budowlanym*, *Finanse, Rynki Finansowe, Ubezpieczenia*, nr 5 (83/2), s. 109-119.
2. Kępka P. (2015), *Projektowanie systemów bezpieczeństwa*, BEL Studio, Warszawa, ISBN: 978-83-7798-232-7.
3. Sadłowska-Wrzesińska J. (2018), *Kultura bezpieczeństwa pracy. Rozwój w warunkach cywilizacyjnego przesilenia*, Aspra, Warszawa.
4. PKN-ISO Guide 73:2012, *Zarządzanie ryzykiem. Terminologia*, PKN, Warszawa.
5. PN-N-18001:2004, *Systemy zarządzania bezpieczeństwem i higieną pracy. Wymagania*, PKN.
6. PN-N-18002:2011, *Systemy zarządzania bezpieczeństwem i higieną pracy. Ogólne wytyczne do oceny ryzyka zawodowego*, PKN, Warszawa.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	30	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	70	2,0

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