



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Human reliability

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### Course

Field of study

Safety Engineering

Area of study (specialization)

Security and Crisis Management

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

elective

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### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

15

### Number of credit points

4

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### 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

Basic knowledge of technical objects exploitation and management, ergonomics and cognitive psychology. Organization of work in accordance with the requirements of ergonomics, health and safety regulations and environmental protection.



### Course objective

Getting acquainted with the basic theoretical and practical aspects of rational development of optimal working conditions. Gaining the ability to apply the concept of distributed cognition in the design, and the use of technology associated with the working process.

### Course-related learning outcomes

#### Knowledge

- knows matters describes costs and structure of insurance systems, in particular in reference to law regulations act on ergonomic requirements and safety of work matters,
- know the issues concerning risk analysis, dangers and its effects 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 provide necessary work resources in industrial environment and knows safety rules related to this work, is able to force their use in practice,

#### Social competences

- is aware of importance of knowledge for effectively resolve safety engineering problems and provide continuous improvement,
- is able to recognize correlations and cause-and-effect dependencies during realization of implementation the objective and rank significance alternative or competitive tasks,
- 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: project appraisal with taking into account assess 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

The concept of reliability, reliability in terms of system approach, creating measures of human reliability, psychological capacity of a man as a basis for foreseeing human errors, applying in practice the knowledge of human reliability, the psychological concept of controlling difficult situations, states of the man and his reliability. The concept of man and the world of values, main ethical categories, the role of the man in ensuring reliability, human-technical object system, the algorithm of system analysis in terms of human factor, balance control between the opportunities and requirements. The use of a theoretical approach to cognitive psychology - cognitive ergonomics.

## Teaching methods

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

## Bibliography

### Basic

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

### Additional

1. Sadłowska-Wrzesińska J. (2018), *Kultura bezpieczeństwa pracy. Rozwój w warunkach cywilizacyjnego przesilenia*, Aspra, Warszawa.
2. Wejman M. (2012), *Higiena pracy*, Wyd. Politechniki Poznańskiej, Poznań.
3. 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.
4. Kęпка P. (2015), *Projektowanie systemów bezpieczeństwa*, BEL Studio, Warszawa, ISBN: 978-83-7798-232-7.
5. Koradecka D. (red.) (1999), *Bezpieczeństwo pracy i ergonomia*, Wyd. CIOP, Warszawa 1999.
6. PKN-ISO Guide 73:2012, *Zarządzanie ryzykiem. Terminologia*, PKN, Warszawa.
7. PN-N-18001:2004, *Systemy zarządzania bezpieczeństwem i higieną pracy. Wymagania*, PKN, Warszawa.



8. 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	90	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for tutorials, preparation for tests, project preparation) <sup>1</sup>	50	2,0

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