



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Hazards identification and occupational risk assessment

### Course

Field of study

Year/Semester

Safety Engineering

3/5

Area of study (specialization)

Profile of study

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general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

30

15

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

Adam Górny, Ph.D., Eng.

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### Prerequisites

The student has the basic information about the hazards and nuisances occurring in the work environment, and methods of their identification.

### Course objective

Acquiring the ability to carry out risk assessment in the work environment and shaping of conditions for safe work performance. Acquiring the ability to conduct the risk analysis using qualitative methods (matrix, indicator and graphic methods). Increasing the awareness of the role and importance of occupational risk assessment related to work performed in ensure a safe working conditions.

### Course-related learning outcomes

Knowledge

- knows the issues related to the identification of hazards, their effects being quantified and the risk assessment in the work environment (in particular the consequences of hazards and nuisance),
- knows the issues related to the life cycle of devices, objects, systems and technical systems,



### Skills

- is able to properly select the sources and scope of information derived from them and carry out critical analysis and synthesis of the information obtained,
- is able to use research, analytical, simulation and experimental methods to formulate and solve engineering tasks,
- is able to perform a critical analysis of the technical solutions functioning (in particular machinery, equipment, objects, systems and processes) and assess them, taking into account their impact on the generation of hazards and nuisance,
- is able to present, using properly selected tools, a problem that falls within the framework of safety engineering,
- is able to identify changes in requirements, standards, regulations and norms and their impact on technical progress and work environment, indicating the need to supplement knowledge on their basis,

### Social competences

- is aware of the occurrence of cause-and-effect relationships that are important in achieving the adopted goals and ranking the importance of alternative solutions,
- is aware of the responsibility for his own work and is ready to comply with the accepted principles of team work and to bear responsibility for jointly performed tasks.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

- in the scope of tutorials: on the basis of reports on independently performed tasks,
- in the scope of project classes: based on the progress of work on the project,
- in the scope of lectures classes: based on oral and written answers to questions covering issues discussed in the current and previous lectures.

Summative rating:

- in the scope of tutorials: average grade of partial grades for submitted reports, colloquium to check knowledge,
- in the scope of project classes: assessment of the completed project task,
- in the scope of lecture classes: exam in the form of a test (written work) in which at least one answer is correct (the answer is scored as 0 or 1), or written answers to open questions (answers are scored on a scale of 0 to 3); student get a positive result of exam after obtaining at least 51% of the points available.

### Programme content

The idea of risk, adverse events, initiating events, critical events. Division of hazards. Potential hazards. Failures as the causes of hazards. Accidents at the workplace as a consequence of hazards. Analysis of hazards and nuisances occurring in the workplace (in industry and services). Risk estimation. Risk determination using matrix, indicator and graphic methods. Determining risk acceptability based on



probabilistic hazards methods. Planning in the vision of risk assessment. Legal requirements for risk assessment. Organization of occupational risk assessment in the enterprise. Risk in technical documents. Guidelines for informing employees about occupational risk.

### Teaching methods

Lecture classes are conducted in the form of an informational lecture supported by a multimedia presentation.

Tutorials are conducted using the case method, based on solving practical examples (tasks). During the exercises, a round table discussion takes place. Preparation for tutorials requires student's independent work, including work with a book.

Project classes are conducted on the basis of case studies with the use of scoring (graded) discussion; students work (carry out tasks) in predetermined groups. Project classes require independent (in consultation with the teacher) solution of a problem (risk assessment at a selected workplace).

### Bibliography

#### Basic

1. Górny A. (2011), Zarządzanie ryzykiem zawodowym, Wydawnictwo Politechniki Poznańskiej, Poznań.
2. Horst W. (2004), Ryzyko zawodowe na stanowisku pracy. Część I: Ergonomiczne czynniki ryzyka, Wydawnictwo Politechniki Poznańskiej, Poznań.
3. Romanowska-Słomka I., Słomka A. (2008), Zarządzanie ryzykiem zawodowym, Wydawnictwo TARBONUS, Kraków - Tarnobrzeg.
4. Romanowska-Słomka I., Słomka A. (2014), Ocena ryzyka zawodowego, wyd. III, Wydawnictwo TARBONUS, Kraków.
5. Zawieska W.M. (red.) (2007), Ryzyko zawodowe. Metodyczne podstawy oceny, Centralny Instytut Ochrony Pracy, Warszawa.

#### Additional

1. Dahlke G., Górny A., Horst W. (2013), Zarządzanie uciążliwością i bezpieczeństwem pracy, Wydawnictwo Politechniki Poznańskiej, Poznań.
2. PN-N-18002:2011, Systemy zarządzania bezpieczeństwem i higieną pracy. Ogólne wytyczne do oceny ryzyka zawodowego.
3. PN-ISO 31000:2018-08, Zarządzanie ryzykiem. Wytyczne.
4. PN-EN 31010:2010, Zarządzanie ryzykiem. Techniki oceny ryzyka.
5. PN-ISO 45001:2018-06/Ap1:2020-01, Systemy zarządzania bezpieczeństwem i higieną pracy. Wymagania i wytyczne stosowania.
6. PKN-ISO Guide 73:2012, Zarządzanie ryzykiem. Terminologia.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	120	4,0
Classes requiring direct contact with the teacher	60	2,0
Student's own work (literature studies, preparation for exercises, preparation of reports on individual work, preparation for colloquium and exam, preparation of the project) <sup>1</sup>	60	2,0

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