



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Safety and protective measures

| | | Course |
|--------------------------------|--|-------------------|
| Field of study | | Year/Semester |
| Safety Engineering | | 4/7 |
| Area of study (specialization) | | Profile of study |
| | | 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 | | |
| Tutorials | Projects/seminars | |
| 15 | | |
| Number of credit points | | |
| 3 | | |

| | | Lecturers |
|---------------------------------------|--|--------------------------------------|
| Responsible for the course/lecturer: | | Responsible for the course/lecturer: |
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Prerequisites

The student has a basic knowledge of ergonomics and work safety. The student is able to identify hazards in the work environment.

Course objective

To familiarize students with the classification, purpose, requirements and possibilities of using means of protective (individual and collective) against dangerous and arduous factors occurring in the work environment. Understanding the criteria for the selection and use of protective measures (personal protective equipment vs. collective protective measures). Indication of the possibility of conducting assessment of reasonable protective measures.

Course-related learning outcomes

Knowledge



- knows issues in the field of technical safety, safety measures and solutions, health and safety at work and identification of hazards and assessment of their consequences [P6S_WG_02],
- knows issues concerning the possibility of occurrence and the scope of hazards and their consequences (including accidents and occupational diseases) associated with risk assessment in the work environment indicating the need for protective measures [P6S_WG_03].

Skills

- is able to correctly select the sources and scope of information derived from them and carry out critical analysis and synthesis of the information obtained [P6S_UW_01],
- is able to prepare the necessary resources, required to ensure the possibility of performing work in an industrial environment, knows the safety rules related to the work performed and is able to apply them in practice [P6S_UW_05],
- is able to present, using properly selected tools, a problem that falls within the framework of safety engineering, in particular related to the selection and application of safety and protective measures [P6S_UK_01],
- is able to identify changes in requirements, standards, regulations and norms aimed at adapting them to technical progress and the reality of the labor market and, on their basis, indicate the need to supplement knowledge and skills [P6S_UU_01].

Social competences

- is aware of the existence of cause-and-effect relationships that are important in achieving the adopted goals and ranking the importance of possible alternative solutions [P6S_KK_01],
- is aware of the knowledge importance in solving problems in the field of security engineering and to ensure of continuous improvement [P6S_KK_01].

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 lectures: on the basis of partial tests covering the discussed issues.

Summative rating:

- in the scope of tutorials: average grade of partial grades for submitted reports, colloquium to check knowledge,
- in partial tests during lectures and exam in the final test 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



Lecture: Requirements for safety and protective measures (individual and collective protection). Conditions for admission of protective equipment and measures to trade on the European market. Division and classification of safety and protective measures as a function of risk factors and protection of individual body parts. Requirements and characteristics of safety measures protecting against heat flux, flame, chemicals (in liquid and gaseous state), aerosols, impacts, electromagnetic radiation, mechanical factors, electrostatic field, falling from height, atmospheric factors, biological factors. Protections against mechanical, electrical and chemical hazards used in devices. Technical protective measures and machine control systems related to ensuring safety. Practical guidelines for selecting personal protective equipment. Assessment and selection of collective protective measures. Application of safety construction.

Tutorials: practical implementation of the issues presented during the lecture.

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.

Bibliography

Basic

1. Nowacka W.Ł., Metody i środki ochrony człowieka w środowisku pracy, Politechnika Warszawska, Warszawa, 2010.
2. Bartkowiak G., Jędrzejewska M., Liwkowicz J., Majchrzycka K., Owczarek G., Robakowski K., Zrobek Z., Środki ochrony indywidualnej. seria: Bezpieczeństwo i Ochrona Człowieka w Środowisku Pracy, t. 16 , Centralny Instytut Ochrony Pracy, Warszawa, 2001.
3. Majchrzycka K., Pościąg A. (red.), Dobór środków ochrony indywidualnej, Centralny Instytut Ochrony Pracy - PIB, Warszawa, 2007.

Additional

1. Bryła R., Bezpieczeństwo i higiena pracy, Wydawnictwo Elamed, Katowice 2011.
2. Górny A., Lis J., Zastosowanie środków ochrony indywidualnej w celu minimalizacji skutków zagrożeń na stanowisku spawacza, Zeszyty Naukowe Politechniki Poznańskiej, Seria: Organizacja i Zarządzanie, 2012, nr 57, s. 54-74.
3. Horst W., Dahlke G., Górny A., Horst N., Horst W. F, Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy. Zasady i wymagania związane z materialnym środowiskiem pracy, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011.
4. Koradecka D. (red.), Bezpieczeństwo pracy i ergonomia, Centralny Instytut Ochrony Pracy, Warszawa, 1997.
5. Przepisy prawne określające wymagania dotyczące stosowania środków ochrony.



Breakdown of average student's workload

| | Hours | ECTS |
|--|-------|------|
| Total workload | 75 | 3,0 |
| Classes requiring direct contact with the teacher | 30 | 1,0 |
| Student's own work (literature studies, preparation for tutorials, preparation of reports on independent work, preparation for tests) ¹ | 45 | 2,0 |

¹ delete or add other activities as appropriate