COURSE DESCRIPTION CARD - SYLLABUS

Course name
Operational safety of technical devices

Course

Field of study
Safety Engineering

Year/Semester
3/6

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes

Other (e.g. online)

Tutorials
15

Projects/seminars
15

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
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Responsible for the course/lecturer:

Prerequisites

The student has basic knowledge in the field of technology. The student has basic design skills. The student is aware of the role and importance of operating conditions for technical devices to ensure work safety.

Course objective

Pointing out to students basic issues related to the safe introduction into service of technical devices and issues related to safety during their use in the work environment.

Course-related learning outcomes

Knowledge

- knows issues in the field of technical safety, safety systems, occupational health and safety and

identification of sources of hazards and their consequences (effects on employees and the technical object) [P6S_WG_02],

- knows the issues of the life cycle of devices, objects, systems and technical systems [P6S_WG_06].

Skills

- is able to properly select sources and information derived from them, carry out assessments and critical analyzes and synthesis of information held and, on this basis, formulate conclusions and comprehensively justify the adopted opinions [P6S_UW_01],

- can apply research, analytical, simulation and experimental methods to formulate and solve engineering tasks [P6S_UW_04],

- is able to prepare the necessary means to organize and perform work in an industrial environment, knows the safety rules related to the work performed and is able to indicate the need to apply them in practice [P6S_UW_05],

- is able to carry out a critical analysis of how technical measures work, in particular machinery and equipment [P6S_UW_06],

- is able to design, using appropriate methods and techniques, an object and a system that meets the requirements related to the operation of technical devices in the work environment [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 able to see the occurring cause-effect relationships important for ensuring the effective implementation of adopted goals and rank alternative or competitive solutions [P6S_KK_01],

- is aware of the importance of knowledge to ensure the effectiveness of solving problems in the field of security engineering and the need for continuous improvement [P6S_KK_02],

- is aware of the need to understand non-technical aspects and effects of engineering activities, including their impact on the human functioning environment and the related responsibility for decisions [P6S_KK_03],

- is aware of the responsibility for own work and the need to be ready to comply with the principles of team work and to be responsible for jointly performed tasks [P6S_KR_02].

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: 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 the scope of project classes: assessment of the completed project task,
- in the scope of lecture classes: partial tests during lectures and exam in the form of a 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: Mechanical hazards and their impact on employees' safety. Safety in the operation of machinery and technical equipment. The system of operational safety of machines and technical devices. Tasks of producers, employers and employees. The requirements of the Machinery Directive. Requirements of directives related to the machinery directive. Conformity assessment process and CE marking. Minimum requirements for the safe operation of machinery. General requirements for ensuring safety during the operation of machinery. Technical risk assessment. Technical documentation and standardization in the design and operation of machines and technical devices. Market surveillance system. The role and tasks of UDT in the process of ensuring operational security.

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

Project classes: identification of requirements and design of a selected safety solution related to the operation of machinery and technical devices

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 an independent (in consultation with the teacher) solution of the problem (i.e. assessment of the technical solution used and indication of the necessary changes).

Bibliography

Basic

1. Rączkowski B., BHP w praktyce, wyd. 18, Wydawnictwo ODDK, Gdańsk, 2019.
2. Tomaszewski Z., Bezpieczeństwo wyrobów oraz ich zgodność ze standardami Unii Europejskiej, Wydawnictwo Politechniki Poznańskiej, Poznań, 2002.
3. Górny A., Ergonomiczne wymagania projektowe (wg wytycznych dyrektywy maszynowej

2006/42/WE), Logistyka, 2014, nr 5, ss. 519 - 529.
4. Górny A., Rola kryteriów ergonomicznych w ocenie zgodności z wymaganiami minimalnymi, Logistyka, 2014, nr 5, ss. 530 - 538.
5. Górny A., Wymagana prawne w zapewnieniu bezpieczeństwa eksploatacji maszyn i urządzeń technicznych, Logistyka, 2014, nr 5, ss. 539 - 547.

Additional

1. Legal regulations specifying the principles of commissioning and ensuring safety during the operation of technical devices.
2. Journals in the issues of operational safety of technical devices (e.g. Atest, Bezpieczeńswto Pracy).
3. Górny A., Ergonomic requirements for the operation of machines and technical equipment, In: N. Balc (ed.), MATEC Web of Conferences (Modern Technologies in Manufacturing (MTeM 2017 - AMaTUC)), 2017, vol. 137, no 03005.
4. Górny A., Application of the FMEA method for the assessment of technical safety levels, IOP Conference Series: Materials Science and Engineering, 2019, vol. 564, no 012091.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	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) [1]	30	1,0

[1] delete or add other activities as appropriate