# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Safety of machines and devices operation [N1IBiJ1>BUMiU]

## Course

Field of study
Safety and Quality Engineering

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

## Number of hours

Lecture
9

Laboratory classes
9

Other
0

Tutorials
0

Projects/seminars
18

## Number of credit points

5,00

## Coordinators

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## Lecturers

## 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:
1. The student has expanded knowledge 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) [K1_W02].
2. The student has expended knowledge of the life cycle of machines and devices operation [K1_W06].
3. The student has knowledge of the fundamental dilemmas of modern civilization and development trends as well as the best practices in the field of safety of machines and devices operation [K1_W10].

Skills:
1. The student is able to properly select sources and information derived from them, carry out assessments and critical analyzes and synthesis of information held in the field of safety of machines and devices operation and, on this basis, formulate conclusions and comprehensively justify the adopted opinions [K1_U01].
2. The student is able to carry out a critical analysis of how technical measures work, in particular machinery and equipment [K1_U06].

Social competences:
1. The student is aware of the need to understand non-technical aspects and effects of engineering activities, i.e., technical risk assessment, including their impact on the human functioning environment and the related responsibility for decisions [K1_K03].

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:
- in the scope of laboratory classes: 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 laboratory classes: average grade of partial grades for submitted reports,
- 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, or written answers to open questions; student get a positive result of exam after obtaining at least 51% of the points available.

## Programme content

Issues determining the introduction of devices into operation. Guidelines for safe operation of technical equipment.

## Course topics

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. Laboratory 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.
Laboratory classes are conducted using the case method, based on solving practical examples (tasks). Preparation for tutorials requires student's independent work, including work with a book. During classes, computer software is used.
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., Application of the FMEA method for the assessment of technical safety levels, IOP Conference Series: Materials Science and Engineering, 2019, vol. 564, no 012091.
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.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 100 | 5,00 |
| Classes requiring direct contact with the teacher | 39 | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 61 | 3,00 |