COURSE DESCRIPTION CARD - SYLLABUS

Course name
Introduction to Safety Engineering

Course

Field of study
Safety Engineering
Area of study (specialization)

Level of study
First-cycle studies
Form of study
part-time

Year/Semester
1/1
Profile of study
general academic
Course offered in
English
Requirements
compulsory

Number of hours

Lecture
10
Laboratory classes

Other (e.g. online)

Tutorials
10
Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
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Faculty of Engineering Management

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Responsible for the course/lecturer:

Prerequisites

The student has a basic knowledge of the issues related to reliability and safety as well as loss

prevention. The student has the ability to obtain information from the indicated sources and is ready to actively seek, systematize and present knowledge in the field of safety engineering.

Course objective

Transfer and systematization of basic theoretical knowledge related to safety engineering. Presentation of the legal determinants of the technical and system approach in safety engineering. Developing the ability to solve problems occurring during safety management.

Course-related learning outcomes

Knowledge

1. The student knows in depth the issues of technical safety, safety systems, occupational health and safety as well as threats and their effects [K1_W02]

2. The student has in-depth knowledge of threats and their effects, risk assessment in the work environment as well as occupational accidents and diseases [K1_W03].

3. The student knows the fundamental dilemmas of modern civilization and development trends as well as the best practices in the field of security engineering [K1_W10].

Skills

1. The student is able to see system and non-technical aspects in engineering tasks, as well as socio-technical, organizational and economic [K1_U03].

2. The student is able to make a critical analysis of the way of functioning and evaluate, in connection with Safety Engineering, the existing technical solutions, in particular machines, devices, objects, systems, processes and services [K1_U06].

3. The student is able to design, using appropriate methods and techniques, an object, system or process that meets the requirements of safety engineering and can make its initial economic assessment [K1_U07].

4. The student is able to take part in the debate, present the problem within the framework of safety engineering using properly selected means [K1_U09].

Social competences

1. The student is aware of the recognition of the importance of knowledge in solving problems in the field of safety engineering and continuous improvement [K1_K02].

2. The student is aware of the understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for decisions [K1_K03].

3. The student is able to initiate activities related to the formulation and transfer of information and cooperation in the society in the area of security engineering [K1_K05].

4. The student is aware of behaving in a professional manner, observing the rules of professional ethics and respecting the diversity of views and cultures [K1_K06].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

a) lectures: short test after the second didactic unit - single / multiple-choice test consisting of several questions. Credit after passing at least 3.0. 1st and 2nd approach passing: 56% of the points available.

b) tutorials: ongoing assessment (on a scale of 2 to 5) of the implemented tasks. Credit after passing at least 3.0. 1st and 2nd approach passing: 56% of the points available.

Summary assessment:

a) lectures: final test at the last lecture. The 40-minute test consists of 15 to 20 questions (single / multiple choice and / or open-ended) with different scores. Credit after passing at least 3.0.. 1st and 2nd approach passing: 56% of the points available.

b) tutorials: average of grades for partial tasks and during the execution; Credit after passing at least 3.0. 1st and 2nd approach passing: 56% of the points available.

Programme content

Lectures:

Safety in the aspect of legal acts and standards. Safety engineering as a science area. Hazards in the aspect of legal acts and standards. Risk in terms of legal acts and standards. Accident / adverse event in terms of legal acts and standards. The causes of the damage. Reducing the consequences of accidents / adverse events.

Tutorials:

Analysis of legal safety requirements. Hazard analysis. Risk assessment. Investigation of accidents / adverse events. Cause and effect relationships. Safety and reliability. Safety Prevention and Rescue.

Teaching methods

Lectures:

- information lecture, seminar lecture, multimedia presentation.

Tutorials:

- multimedia presentation, case study. The class uses the classic problem method, as well as the method of cases and exercises.

Bibliography

Basic

1. Krause M., (2020), Podstawy inżynierii bezpieczeństwa,Wydawnictwo Politechniki Śląskiej, Gliwice.

2. Regulacje prawne dotyczace omawianych zagadnień.

3. Pihowicz W. (2008), Inżynieria bezpieczeństwa technicznego problematyka podstawowa. Wydawnictwo Naukowo-Techniczne, Warszawa.

4. Szopa T. (2016), Niezawodność i bezpieczeństwo. Wydawnictwo Politechniki Warszawskiej. Warszawa.

5. Ficoń K., (2007) Inżynieria zarządzania kryzysowego. Podejście systemowe. BEL Studio Sp. z o.o., Warszawa.

Additional

1. Ewertowski T., Kasprzycka M., Lewandowska M., (2019), Analiza oceny zagrożeń prowadzonych na potrzeby opracowania planu ratowniczego na podstawie wybranych przykładów, Bezpieczeństwo zdrowotne : postępy monitorowania i obrazowania stanu środowiska / red. Jerzy Konieczny, Leonard Dajerling , Uniwersytet im. Adama Mickiewicza w Poznaniu, Poznań, s. 337-353.

2. Ewertowski T. (2018), Doskonalenie systemu zgłaszania zdarzeń niepożądanych w organizacjach w kontekście wdrażania przez nie normy ISO 45001:2018, Zeszyty Naukowe Politechniki Poznańskiej. Organizacja i Zarządzanie, nr 78, s. 19- 34.

3. Ewertowski T., Butlewski M., (2021), Development of a Pandemic Residual Risk Assessment Tool for Building Organizational Resilience within Polish Enterprises, International Journal of Environmental Research and Public Health - 2021, vol. 18, iss. 13, s. 6948-1-6948-14.

4. Sławińska M., Berlik M., Ewertowski T., Derbich M., Król I., (2019), Skuteczność zarządzania operacyjnego na podstawie bazy informacji eksploatacyjnej, Zeszyty Naukowe Politechniki Poznańskiej. Organizacja i Zarządzanie, nr 80, s. 235-251.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for tests, project preparation) [1]	30	1,0

[1] delete or add other activities as appropriate