COURSE DESCRIPTION CARD - SYLLABUS

Course name
Introduction to Safety and Quality Engineering [S1IBiJ1>WdIBiJ]

Course

Field of study
Safety and Quality Engineering

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student has basic knowledge in the fields of engineering and management. It is advisable to understand the fundamental concepts related to safety and quality management systems. The student has the ability to obtain information from indicated sources and is ready to actively search for, systematize, and present knowledge in the area of safety and quality engineering.

Course objective

The aim of the course is to convey and systematize basic theoretical knowledge related to safety and quality engineering. The course aims to develop skills in identifying, analyzing, and managing risk associated with safety and quality, taking into account legal conditions as well as the latest trends and dilemmas of contemporary civilization.

Course-related learning outcomes

Knowledge:
1. Defines concepts related to safety and quality in the context of legal acts and standards, characterizing safety and quality engineering as a field of science [K1_W02].
2. Explains threats and risks in the aspect of legal acts and standards, identifying the causes of

undesirable events and non-conformities [K1_W03].
3. Describes fundamental dilemmas of contemporary civilization, development trends, and best practices in the field of safety engineering [K1_W10].

Skills:
1. Analyzes legal requirements in terms of safety and quality, assessing risk and identifying threats [K1_U03].
2. Optimizes existing technical solutions, increasing the quality and safety of machines, devices, objects, systems, processes, and services [K1_U06].
3. Applies appropriate methods and techniques for designing objects, systems, or processes that meet high standards of quality and safety [K1_U07].
4. Presents and debates on topics related to safety engineering, using appropriately selected communication means [K1_U09].

Social competences:
1. Develops awareness of the importance of continuous improvement in solving problems related to safety and quality engineering [K1_K02].
2. Understands the non-technical aspects and consequences of engineering activities, including their impact on the environment, and takes responsibility for the decisions made [K1_K03].
3. Initiates actions related to formulating and disseminating information and cooperating in society in the field of safety engineering [K1_K05].
4. Demonstrates professionalism and adheres to professional ethics principles, promoting respect for diversity and building a culture of safety and quality [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 third 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; Credit after passing at least 3.0. 1st and 2nd approach passing: 56% of the points available.

Programme content

The program covers the general characteristics of safety and quality management engineering, including: legal aspects and standards, standardization and non-compliances, risks and adverse events.

Course topics

Lecture:
Safety and Quality in the Aspect of Legal Acts and Standards. Safety and Quality Engineering as a Field of Science. Standardization in Quality and Safety Management. Threats and Risks in the Aspect of Legal Acts and Standards. Adverse Event/Non-conformities in the Aspect of Legal Acts and Standards. Causes of Adverse Events and Non-conformities. Reducing the Effects of Adverse Events/Non-conformities.
Exercises:
Analysis of Legal Requirements in Safety and Quality. Hazard Analysis. Risk Assessment. Problem-solving and Improvement Tools. Investigation of Adverse Events/Non-conformities. Cause-and-Effect Relationships. Safety and Reliability. Improvement in Safety and Quality.

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	2,00
Classes requiring direct contact with the teacher	30	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	0,50