COURSE DESCRIPTION CARD - SYLLABUS

Course name
Upper-tier establishments (ZDR)

Course

Field of study
Safety Engineering
Area of study (specialization)

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

Year/Semester
3/6
Profile of study
general academic
Course offered in
English
Requirements
elective

Number of hours

Lecture
8
Laboratory classes

Other (e.g. online)

Tutorials
10
Projects/seminars
8

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
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Faculty of Engineering Management

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Responsible for the course/lecturer:

Prerequisites

Student has a basic knowledge of the risk factors in the environment of the organization's functioning;

Student is able to identify and assess these threats, as well as assess the related risk. Student is aware of the relationship between the risk of threats and their effects on the functioning of the organization.

Course objective

The aim of the course is to acquire by the student the knowledge of the basic issues related to the operation of upper-tier establishments (ZDR) in the area of: hazard identification, analysis of potentially dangerous events (scenarios) and operational safety in these plants. On a practical level, the goal is to acquire the ability to use properly selected methods, principles and tools used to ensure safety in plants with a high risk of industrial failure.

Course-related learning outcomes

Knowledge

1. Student thoroughly knows the issues of technical safety, safety systems, occupational health and safety as well as threats and their effects in plants with a high risk of industrial failure [K1_W02].

2. Student has advanced knowledge of ergonomics, human ecology and environmental protection in relation to the specificity of the operation of plants with a high risk of industrial failure [K1_W05].

3. Student has advanced knowledge of the life cycle of devices, facilities, systems and technical systems that result from industrial activities and relate to the plant area and its surroundings [K1_W06].

4. Student knows the fundamental dilemmas of modern civilization and the trends of sustainable development as well as the best practices in the field of Safety Engineering in ensuring the highest possible level of safety in plants that use hazardous substances [K1_W10].

Skills

1. Student is able to prepare the necessary resources for work in an industrial environment, knows the safety rules related to this work and can enforce their use in practice [K1_U05].

2. Student is able to perform a critical analysis of the operation of plants with a high risk of industrial failure and assess, in connection with Safety Engineering, the existing technical solutions, in particular machines, devices, facilities, systems, processes and services [K1_U06].

3. Student is able to apply standards and norms in solving practical engineering tasks in the field of Safety Engineering, in the context of the operation of plants with a high risk of industrial failure [K1_U08].

4. Student is able to identify changes in requirements, standards, regulations, technical progress and the reality of the labor market in the context of the operation of plants with a high risk of industrial failure and on their basis determine the need for supplementing knowledge [K1_U12].

Social competences

1. Student is aware of the importance of knowledge in solving problems in the field of Safety Engineering and continuous improvement [K1_K02].

2. Student is aware of the understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions made in this area [K1_K03].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

Lecture: knowledge is verified by a short test after the third didactic unit - a single-choice test consisting of several questions (concepts and definitions) + written problem tasks; 1st and 2nd attempt credit threshold - 50% + 1%;

Exercises: current assessment of the performed tasks on a scale of 2- 5; 1st and 2nd attempt credit threshold - 50% + 1%;

Project: ongoing evaluation of individual parts of the project on a scale of 2-5; 1st and 2nd attempt credit threshold - 50% + 1%;

Summative assessment:

Lecture: final test at the last unit of classes; 1st and 2nd attempt credit threshold - 50% + 1%,

Exercises: average of partial grades for individual tasks; 1st and 2nd attempt credit threshold - 50% + 1%,

Project: average of partial grades for the implementation of individual project phases + grade for the editorial level of the project and progress during the course; 1st and 2nd approach credit threshold - 50% + 1%.

Programme content

Lecture:

Basic definitions related to the operation of an upper-tier establishment (ZDR); The binding legal regulations in the field of operation of an upper-tier establishment (ZDR); The procedure for crediting and the procedure for reporting an upper-tier establishment (ZDR); Emergency plans in lower-tier establishments (ZZR) and upper-tier establishments (ZDR); Principles of responding to failures in ZZR and ZDR; Requirements for reporting major industrial accidents to appropriate institutions; Informing the public about major industrial accidents; Inspections, controls, supervision of lower-tier establishments (ZZR) and upper-tier establishments (ZDR).

Exercises:

Procedures for including plants in the upper-tier establishment (ZDR) category (Polish and international regulations); Procedure for reporting the upper-tier establishment (ZDR) to the appropriate institutions (characteristics of the area surrounding the plant, making changes to the to the notification procedure); Requirements and rules for the preparation of documentation related to the upper-tier establishment

(ZDR); Hazards resulting from industrial activities, mainly related to the use of hazardous materials in technological processes; Methods and channels of informing the public about the occurrence of an industrial accident.

Project: students prepare documentation related to the operation of an upper-tier establishment (ZDR) (description of the plant's safety system, Accident Prevention Program, Safety Raport, handling of chemicals).

Teaching methods

Lecture:

- information lecture, seminar lecture, multimedia presentation.

Exercises:

- exposing methods (multimedia presentation, film), panel discussion, case study, brainstorming, practical exercises.

Project:

- multimedia presentation, case study.

Bibliography

Basic

1. Rozporządzenie Ministra Rozwoju z dnia 29 stycznia 2016 r. w sprawie rodzajów i ilości znajdujących się w zakładzie substancji niebezpiecznych, decydujących o zaliczeniu zakładu do zakładu o zwiększonym lub dużym ryzyku wystąpienia poważnej awarii przemysłowej, z późniejszymi zmianami (Ordinance of the Minister of Development on the types and quantities of hazardous substances present in the plant, which determine the classification of the plant as a plant with an increased or high risk of a serious industrial accident).

2. Dyrektywa Parlamentu Europejskiego i Rady 2012/18/UE z dnia 4 lipca 2012 r. w sprawie kontroli zagrożeń poważnymi awariami związanymi z substancjami niebezpiecznymi, zmieniającej, a następnie uchylającej dyrektywę Rady 96/82/WE (Dyrektywie Seveso III), z późniejszymi zmianami (Directive 2012/18 / EU of the European Parliament and the Council on the control of major-accident hazards involving dangerous substances).

3. Rozporządzenie Parlamentu Europejskiego i Rady (WE) nr 1272/2008 z dnia 16 grudnia 2008 r. w sprawie klasyfikacji, oznakowania i pakowania substancji i mieszanin, zmieniające i uchylające dyrektywy 67/548/EWG i 1999/45/WE oraz zmieniające rozporządzenie (WE) nr 1907/2006 (Dz. Urz. UE L 353 z 31 grudnia 2008 roku), z późniejszymi zmianami (Regulation of the European Parliament and the Council (EC) on classification, labeling and packaging of substances and mixtures).

4. Pabiś A. (2018), Bezpieczeństwo procesowe część I Bezpieczeństwo chemiczne, Wydawnictwo Politechniki Krakowskiej, Kraków.

5. Tuśno N., Wolny P., Siuta D. (2020), Programy komputerowe do wyznaczania prawdopodobieństwa oraz skutków poważnych awarii, Zeszyty Naukowe SGSP, nr 74, s. 47- 67.

Additional

1. Bienias M., Czerniak K., Ewertowski T. (2019), Preparation of an enterprise for emergency situations, Informatyka Ekonomiczna, nr 3(53), s. 9- 22.

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. Czernecka W., Górny A. (2018), Ergonomic risk measurement in prioritizing corrective action at workstations, [in:] Occupational Safety and Hygiene VI: Proceedings of the 6th International Symposium on Occupation Safety and Hygiene, Guimarães, Portugal (p. 419), CRC Press.

4.Ewertowski T., Kubasiński S. (2021), Multi-Criteria Comparative Analysis of Proactive Safety Strategy of An Organization Exemplified by Polish Companies [w]: Proceedings of the 37th International Business Information Management Association Conference (IBIMA), 30-31 May 2021, Cordoba, Spain. Innovation Management and information Technology impact on Global Economy in the Era of Pandemic / red. Soliman Khalid: IBIMA Publishing, s. 10638- 10646.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	26	1,0
Student's own work (literature studies, preparation for tutorials, preparation for tests, project preparation) [1]	49	2,0

[1] delete or add other activities as appropriate