COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technical risk analysis

Course

Field of study
Safety Engineering
Area of study (specialization)

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

Year/Semester
1/2
Profile of study
general academic
Course offered in
polish
Requirements
compulsory

Number of hours

Lecture
10
Laboratory classes

Other (e.g. online)

Tutorials
14
Projects/seminars

Number of credit points

4

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Małgorzata Jasiulewicz-Kaczmarek

Wydział Inżynierii Zarzadzania

Instytut Inżynierii Bezpieczeństwa i Jakości

Zakład Zarządzania Ryzykiem i Jakością

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Responsible for the course/lecturer:
dr inż Roma Marczewska Kuźma

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Prerequisites

A student starting this subject should have basic knowledge of probability theory and basic techniques. He should also be able to obtain information from sources indicated by the teacher

Course objective

Acquiring by the student the knowledge (systematics and methodology) needed to identify threats and analyze the risks associated with them using quantitative and qualitative methods

Course-related learning outcomes

Knowledge

P6S_WG_02: has detailed knowledge of the types of risk; knows the issues of technical safety, security systems, health and safety as well as threats and their effects

P6S_WG_02: knows the issues of identifying hazards and assessing their effects, knows the methods for estimating the risk associated with the hazards in the product implementation processes in relation to people and the environment

Skills

P6S_UW_03: identifies connections between system elements, taking into account organizational, technical and economic relations

P6S_UW_05 can determine the supervision measures in relation to the identified threats, justifies the need for them

Social competences

P6S_KK_01: understands that knowledge and skills in identifying threats and analyzing the risk of their occurrence requires a systematic review, and not only the nature of threats but also the sequences of burns associated with them change, recognizes cause-and-effect relationships and is able to rank and prioritize them.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

a) exercises: assessment of current progress of task implementation

b) lectures: answers to questions about the content of previous lectures,

Summative rating:

a) exercises: presentation of reports on exercises performed (arithmetic average of partial grades);

b) lectures: Tests consist of 20-30 questions (test), scored on a two-point scale of 0, 1. Passing threshold: 50% of points. Assessment issues on the basis of which questions are prepared are based on the content provided to students during lectures, and additional materials indicated by the teacher.

Programme content

Lecture:

Risk concepts, adverse events, initiating events, critical events. Division of threats. Potential and real threats. Occupational risk, process risk, environmental risk. Risk estimation. Risk determination using matrix, indicator and graphic methods. Determination of security losses. Multidimensional risk analysis. Determining risk acceptability based on probabilistic methods

Exercises:

Risks in the product life cycle - risk allocation to individual stages of the cycle

Product implementation processes - identification of hazards, emergency events, accident scenario, risk estimation

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples on the board.

2. Exercises: multimedia presentation illustrated with examples given on a blackboard and performance of tasks given by the teacher - practical exercises.

Bibliography

Basic

Thlon M., Charakterystyka i klasyfikacja ryzyka w działalności gospodarczej. Zesz. Nauk. UEK, 2013; 902: 17–36

MATUSZEK J, BYRSKA-BIENIAS K., OCENA I REDUKCJA RYZYKA TECHNICZNEGO MASZYN 2016 http://www.ptzp.org.pl/files/konferencje/kzz/artyk_pdf_2016/T2/t2_0423.pdf

Biedugnis S., Smolarkiewicz M., Podwójci P., Czapczuk A. Mapy ryzyka funkcjonowania rozległych systemów technicznych 2007 https://ros.edu.pl/images/roczniki/archive/pp_2007_022.pdf

Jasiulewicz-Kaczmarek M. 2015, Practical aspects of the application of RCM to select optimal maintenance policy of the production line, In: Nowakowski, T; Mlynczak, M; Jodejko-Pietruczuk, A; et al. Safety and Reliability: Methodology and Applications - Proceedings of the European Safety and Reliability Conference, ESREL 2014 Location: Wroclaw, POLAND Date: SEP 14-18, 2014 Taylor & Francis Group, London, 2015, pp. 1187-1195, ISBN 978-1-138-02681-0

Pamuła W., Niezawodność i bezpieczeństwo. Wybór zagadnień. Wydawnictwo Pol.Śl. Gliwice 2011.

Additional

Pietrzak L., Modelowanie wypadków przy pracy. BEZPIECZEŃSTWO PRACY 4/2002

PN-EN 61882 HAZOP, Badania zagrożeń i zdolnosci do działania

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	24	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	76	2,0

[1] delete or add other activities as appropriate