COURSE DESCRIPTION CARD - SYLLABUS

Course name

Contemporary ergonomics problems

Course

Field of study

Safety Engineering

Area of study (specialization)

Ergonomics and work safety

Level of study

Second-cycle studies

Form of study

part-time

Year/Semester

II/3

Profile of study

general academic

Course offered in

polish

Requirements

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

10

Projects/seminars

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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Zakład Zastosowań Ergonomii

Responsible for the course/lecturer:

Prerequisites

The student has the ability to acquire knowledge from the indicated sources and is ready to start teamwork during classes. The student is characterized by knowledge of ergonomics, ergonomic design and is familiar with the issues of psychology, ethics and occupational hygiene. The student has the skills

to assess, diagnose, measure and monitor a technical factor and a human factor in the living and working environment.

Course objective

Providing the student with knowledge in the field of contemporary ergonomics, used in a wide spectrum of product design and working conditions. Developing students' skills in solving problems arising in corrective ergonomics, conceptual ergonomics, and ergonomic innovations.

Course-related learning outcomes

Knowledge

Student:

1. knows issues in the field of risk analysis, threats and their effects in the work environment [P7S_WG_05]

2. knows design issues in relation to products and processes [P7S_WG_07]

3. knows the basic methods, techniques, tools and materials used to solve simple engineering tasks in the field of ergonomics and work safety using information technology, information protection and computer support [P7S_WK_03]

Skills

Student:

1. is able to properly select the sources and information derived from them, make an assessment, critically analyze and synthesize this information, formulate conclusions and comprehensively justify the opinion [P7S_UW_01]

2. is able to notice and formulate system and non-technical aspects as well as socio-technical, organizational and economic aspects in engineering tasks [P7S_UW_03]

3. is able to use research, analytical, simulation and experimental methods to formulate and solve engineering tasks, also using information and communication methods and tools [P7S_UW_04]

4. is able to perform a critical analysis of the way it functions and assess - in conjunction with Safety Engineering - existing technical solutions, in particular machines, devices, objects, systems, processes and services [P7S_UW_06]

5. is able to present the problem within the framework of ergonomics and occupational safety by means of properly selected means [P7S_UK_01]

6. is able to plan and carry out experiments, including computer measurements and simulations, interpret obtained results and draw conclusions [P7S_UO_01]

7. is able to identify changes in requirements, standards, regulations, technical progress and the reality of the labor market, and based on them determine the needs to supplement own and other knowledge [P7S_UU_01]

Social competences

Student:

1. is aware of the recognition of cause-and-effect relationships in achieving the set goals and ranking the importance of alternative or competitive tasks [P7S_KK_01]

2. 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 [P7S_KK_03]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Skills acquired during the classes are verified by student presentations, problem groups and situational scenes assessed after each class. The exam is formulated on the basis of the average of the grades obtained after each class.

Programme content

1. Classes:

Introduction to the subject by detailed discussion of the interest of modern ergonomics in human and technical activities. The problems of praxeology in work and product ergonomics. Formulating the problem of the subject, division of students into task groups. Work in groups. The use of the classical problem method and cases in solving specific ergonomic technical and organizational problems for selected professional cases. Presentation of group results, round table discussion on the solutions received. Student work evaluation. Information about the necessary preparation of students for the next classes, and the definition of selected objects observing ergonomic problems for training teams.

2. Classes:

Work in groups. SWOT examples of ergonomic solutions introduced in selected public infrastructure buildings. Strategy, strengths and weaknesses, brainstorming over solving sophisticated ergonomic problems. Presentation of group results, round table discussion on the solutions received. Student work evaluation. Information on the necessary preparation of students for the next class.

3. Classes:

Work in groups. Simulation, decision-making and psychological analysis of selected elements of ergonomics of leisure, recreation and sport. Practical solutions. Presentation of group results, round table discussion on the solutions received. Student work evaluation. Information on the necessary preparation of students for the next class.

4. Classes:

Work in groups. The use of demonstration methods with explanation and instruction of selected ergonomic elements of engineering art or an innovative work. Presentation of group results, round table discussion on the solutions received. Student work evaluation. Information on the necessary preparation of students for the next class.

5. Classes:

Work in groups. Presentation of direct learning about the reality of ergonomic issues through systematic observation of a selected technical and engineering facility. Round table discussion on the solutions received. Student work evaluation. Issuing grades for the subject.

Teaching methods

Multimedia presentations, group work, practical and problem classes, observation methods, SWOT, simulations, demonstrations, round table methods.

Bibliography

Basic

1. Projektowanie ergonomiczne, Edwin Tytyk, Wydawnictwo Naukowe PWN, Poznań, 2001.

2. Ergonomia w technice, Edwin Tytyk, Marcin Butlewski, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011.

3. Bezpieczeństwo i higiena pracy, ergonomia i ochrona własności intelektualnej, Edwin Tytyk, Wydawnictwo Politechniki Poznańskiej, Poznań, 2017.

4. Ergonomia : ocena stanowisk pracy, Małgorzata Wojsznis, Wydawnictwo Politechniki Poznańskiej, Poznań, 2018.

5. Komputerowo wspomagane projektowanie systemów antropotechnicznych, Teodor Winkler, Wydawnictwa Naukowo-Techniczne, Warszawa, 2005.

6. Makroergonomia i projektowanie makroergonomiczne : materiały pomocnicze, Aleksandra Jasiak, Agnieszka Misztal, Wydawnictwo Politechniki Poznańskiej, Poznań, 2004.

7. Ergonomia produktu : ergonomiczne zasady projektowania produktów, Jan Jabłoński (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2006.

8. Methods, standards, and work design, Benjamin W. Niebel, Andris Freivalds,

Boston McGraw-Hill, 2004.

9. Ergonomia w projektowaniu stanowisk pracy : podstawy teoretyczne, Ewa Górska, Edwin Tytyk, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998.

Additional

1. Powszechna historia techniki, Bolesław Orłwski, Oficyna Wydawnicza Móiąieki, Warszawa, 2010.

2. Ergonomia w architekturze i urbanistyce : kierunki badań w 2015 roku, Jerzy Charatynowicz (red.), Wydawnictwo Polskiego Towarzystwa Ergonomicznego PTErg, Wrocław, 2015.

3. Projektowanie ergonomiczne środków transportu miejskiego, Iwona Grabarek, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2017.

4. BHP i ergonomia dla inżynierów : projektowanie ergonomiczne procesów pracy i stanowiska roboczego, Anna Zawada-Tomkiewicz, Borys Storch, Wydawnictwo Uczelniane Politechniki Koszalińskiej, Koszalin, 2017.

5. Diagnoza ergonomiczna stanowisk pracy, Ewa Górska, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998.

Breakdown of average student's workload

	Hours	ECTS
Total workload	14	1,0
Classes requiring direct contact with the teacher	10	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	4	1,0

[1] delete or add other activities as appropriate