COURSE DESCRIPTION CARD - SYLLABUS

Course name
Ergonomics [N1MiBM2>ERG]

Course

Field of study
Mechanical Engineering

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
8

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
8

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student should have knowledge of the operation and organization of enterprises, production or service plants. He/she should be aware of the risks in the workplace and be able to identify them. The student should be able to use regulations and normative acts.

Course objective

The aim of the course is to familiarize students with issues related to the ergonomic organization of workplaces, workload and loads from work environment, as well as ergonomic diagnosis of workplaces.

Course-related learning outcomes

Knowledge:
The student knows the ergonomic requirements for machines and working environment.
The student knows the methods of ergonomic diagnosis and workplace design.
The student knows the scope of the given discipline and contemporary trends in this area.

Skills:
The student is able to identify hazards and assesss occupational risks in the workplace.

The student is able to assess the influence of work and factors occurring in the work environment on the employee and to evaluate the usefulness of the methods used for the assessment.
The student knows how to use regulations and normative acts to optimize solutions improving ergonomics of the workplace.

Social competences:
The student is aware of the role of the individual in solving the issues of ergonomic shaping of the working environment and makes efforts to convey, in a commonly understood way, his knowledge and skills in order to improve the working conditions.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired as part of the lecture is verified on the basis of the final test during the last class in the semester. The test consists of 15 single-choice questions. In each question, 1 point is obtained for the correct answer. Passing threshold: 50%.
The knowledge and skills acquired in the project classes are verified by the presentation of the project developed by the students (in groups) and the discussion of the work.

Programme content

Lecture:
Basics of ergonomics, purpose and tasks, historical background. Directions and areas of expertise in ergonomics. The man in the work process - the basic ergonomic system. Ergonomic workplace organisation. The workload of a man. Ergonomic diagnosis of workplaces. Loads from the work environment. Occupational risk assessment. Supervision and control of working conditions in Poland.
Project:
Topic: Analysis and ergonomic risk assessment of musculoskeletal disorders and occupational risks at a selected workstation.
Tasks:
- Description of the studied workstation, taking into account the protective measures used
- Preparation of a chronometric of the working day (photographs of the working day)
- Identification of risks at the analyzed workstation
- Discussion and presentation of the analyzed work position and activities performed
- Analysis and evaluation of static load using the OWAS method
- Determination and evaluation of energy expenditure using the Lehmann method
- Selection and presentation of a method for ergonomic risk assessment of musculoskeletal disorders, e.g.: risk assessment of manual handling of materials (NIOSH equation), assessment of the whole body (REBA method), assessment of upper limbs (RULA method)
- Ergonomic risk assessment of musculoskeletal disorders based on the method included in the © ErgoPlus program
- Assessment of occupational risk at the analyzed workstation by the selected method, e.g: Risc Score
- Proposal for elimination, avoidance or reduction of risks at the analyzed workstation

Course topics

none

Teaching methods

Lecture: multimedia presentation illustrated with examples.
Project: presentation of the project developed by the students (in groups), solving practical problems, finding sources, working in a team, discussion.

Bibliography

Basic:
Górska E., Diagnoza ergonomiczna stanowisk pracy, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998 r. [in Polish]
Górska E., Ergonomia, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2015 r. [in Polish]
Roman-Liu D., Tokarski T., Ocena obciążenia statycznego z zastosowaniem metody OWAS. [in Polish]

Tytyk E., Projektowanie ergonomiczne, PWN, Warszawa - Poznań, 2001 r. [in Polish]
Wojsznis M., Ergonomia - ocena stanowisk pracy, Wydawnictwo Politechniki Poznańskiej, Poznań 2018. [in Polish]

Additional:
Główczyńska ─ Woelke K., Ocena ryzyka zawodowego, 2009 [in Polish]
Rozporządzenie Ministra Pracy i Polityki Społecznej z dnia 6.06.2014 r. w sprawie najwyższych dopuszczalnych stężeń i natężeń czynników szkodliwych dla zdrowia w środowisku pracy (Dz. U. z 2014 r. poz. 817) [in Polish]
Rozporządzenie Ministra Pracy i Polityki Socjalnej z dnia 26 września 1997 r. w sprawie ogólnych przepisów bezpieczeństwa i higieny pracy. (Dz. U. 1997 nr. 129 poz. 844) [in Polish]
Marek K., Choroby zawodowe, Wydawnictwo Lekarskie PZWL , Warszawa, 2003. [in Polish]
Markiewicz L., Fizjologia i higiena pracy, Instytut Wyd. CRZZ, Warszawa, 1980. [in Polish]

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	16	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	34	1,50