



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Diagnosing the working environment

---

### 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

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

elective

---

### Number of hours

Lecture

10

Tutorials

10

Laboratory classes

Projects/seminars

10

Other (e.g. online)

### Number of credit points

5

---

### Lecturers

Responsible for the course/lecturer:

dr inż. Milena Drzewiecka - Dahlke

email: milena.drzewiecka-

dahlke@put.poznan.pl

tel. +48 616653379

Wydział Inżynierii Zarządzania

ul. Jacka Rychlewskiego 2, 60-965 Poznań

Responsible for the course/lecturer:

dr inż. Grzegorz Dahlke

email: grzegorz.dahlke@put.poznan.pl

tel. +48 616653379

Wydział Inżynierii Zarządzania

ul. Jacka Rychlewskiego 2, 60-965 Poznań

---

### Prerequisites



The student has the knowledge to define the hazardous, harmful and nuisance factors in the work environment. He/she can distinguish physical, chemical and biological factors present in the human environment.

### Course objective

Practical knowledge of the methods of identification, measurement and analysis of hazardous and harmful factors listed in the Ordinance of the Minister of Labour for which the maximum permissible concentrations and intensities have been determined.

### Course-related learning outcomes

#### Knowledge

1. the student has detailed knowledge of the legal requirements concerning the impact of harmful factors on employees in the working environment [P7S\_WG\_02]

The student knows the legal requirements concerning the conditions and frequency of measurements of harmful factors in the working environment [P7S\_WK\_03].

3. the student is familiar with the measurement procedures contained in the standardization and literature concerning the measurement of harmful factors in the working environment [P7S\_WK\_03].

#### Skills

1. the student is able to update the legal and normative requirements concerning harmful factors in the working environment [P7S\_UU\_01].

2. the student is able, on the basis of the analysis of legal and normative requirements concerning the work environment, to prepare a procedure for testing harmful factors [P7S\_UW\_01].

3. the student is able to organize the measurements of harmful factors in the work environment by developing a research schedule and indicating the necessary information that he should receive from the company about the examined workplaces [P7S\_UW\_02]

4. the student is able to identify the dependence of the levels of identified harmful factors on the way the employee performs his/her tasks [P7S\_UW\_03].

5 The student is able to operate the basic measuring equipment for identifying exposure to physical agents in the working environment [P7S\_UW\_04].

6. the student is able to plan and perform measurements of physical factors in the work environment [P7S\_UO\_01].

7 The student is able to analyse results and prepare measurement protocols from tests of harmful factors at the workplace [P7S\_UW\_05].

8 The student is able to prepare and keep a register of factors harmful to health and a test and measurement card for these factors [P7S\_UW\_06].



9. the student is able to present the results of tests and measurements of harmful factors and explain their influence on health using a language that is accessible to the examined employees [P7S\_UK\_01].

Social competences

1. the student is aware of the significance of the impact of measurements carried out in the working environment on the health and life of employees and the importance of being guided by the highest ethical standards in relations in the working environment [P7S\_KK\_01]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formal evaluation:

- a) exercises: current evaluation (on a scale from 2 to 5) of the tasks and colloquia,
- b) projects: evaluation of the implementation of project tasks,
- c) lectures: assessment of responses during a written colloquium.

Summary evaluation:

- a) exercises: average of partial tasks' marks; a pass after obtaining at least 3.0,
- b) projects: assessment of the implementation of the project tasks carried out in the given chapters; a credit after obtaining at least a score of 3.0 (the condition is to prepare the main tasks),
- c) lectures: written examination (answers to 30 open and closed questions) from the content presented in the lecture; each answer is scored on a scale from 0 to 1; the score is calculated after summing up the points and recalculating according to the scale provided for in the study regulations.

### Programme content

Working environment characteristics. Measurement frequency requirements. Measuring apparatus in the diagnostics of working environment. Diagnosis of acoustic environment - audible, infrasound and ultrasound noise. Diagnosing exposure to general and local vibrations. Diagnosing the thermal environment - cold, hot and moderate microclimate. Diagnosis of exposure to non-ionizing radiation (optical radiation (laser and non-laser), electromagnetic radiation. Determining the uncertainty of measurements.

### Teaching methods

Lecture supported by a multimedia presentation and measurement experiments. During the training classes, students use outlines for tasks including preparation and execution of measurements in the environment and solve calculation tasks. During the design classes, the students design the process of research and analysis of harmful factors at the workplace for the given evaluation criteria.

### Bibliography



Basic

1. Horst W. M., Dahlke G., Górny A., Horst N., Horst W. F., Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy. Zasady i wymagania związane z materialnym środowiskiem pracy, Wydawnictwo Politechniki Poznańskiej, 2011
2. Koradecka D. (red.), Bezpieczeństwo i higiena pracy, Wyd. CIOP, Warszawa 2008
3. Polskie Normy z zakresu środowiska pracy
4. Rozporządzenie Ministra Pracy i Polityki Społecznej w sprawie najwyższych dopuszczalnych stężeń i natężeń czynników szkodliwych dla zdrowia w środowisku pracy (aktualne)
5. Rozporządzenie Rady Ministrów w sprawie wykazu prac uciążliwych, niebezpiecznych lub szkodliwych dla zdrowia kobiet w ciąży i kobiet karmiących dziecko piersią (aktualne)
6. Rozporządzenie Rady Ministrów w sprawie wykazu prac wzbronionych młodocianym i warunków ich zatrudniania przy niektórych z tych prac (aktualne)
7. Uzarczyk A., Czynniki szkodliwe i uciążliwe w środowisku pracy, Wyd. ODDK, Gdańsk 2009

Additional

1. Engel Z., Ochrona środowiska przed drganiami i hałasem, Wydawnictwo Naukowe PWN, Warszawa 2001
2. Jan Paweł II, 1981, Encyklika Laborem Exercens, Wydawnictwo Pallotinum, Poznań
3. Koradecka D. (red.), Bezpieczeństwo pracy i ergonomia, Wyd. CIOP, Warszawa 1997
4. Pacholski L. (red.), Ergonomia, Wyd. Politechniki Poznańskiej, Poznań 198

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	110	5,0
Classes requiring direct contact with the teacher	30	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	80	3,0

<sup>1</sup> delete or add other activities as appropriate