# STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | | Code |
|---|---|---|
| **Environment Protection** | | **1011101231011124337** |
| Field of study | Profile of study (general academic, practical) | Year /Semester |
| **Safety Engineering - Full-time studies - First-** | **(brak)** | **2 / 3** |
| Elective path/specialty | Subject offered in: | Course (compulsory, elective) |
| **-** | **Polish** | **elective** |
| Cycle of study: | Form of study (full-time,part-time) | |
| **First-cycle studies** | **full-time** | |
| No. of hours | | No. of credits |
| Lecture: **30** Classes: **-** Laboratory: **30** Project/seminars: **15** | | **6** |
| Status of the course in the study program (Basic, major, other) | (university-wide, from another field) | |
| **(brak)** | **(brak)** | |
| Education areas and fields of science and art | | ECTS distribution (number and %) |
| **technical sciences**<br>**Technical sciences** | | **6 100%**<br>**6 100%** |

## Responsible for subject / lecturer:

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## Prerequisites in terms of knowledge, skills and social competencies:

| | | |
|---|---|---|
| 1 | **Knowledge** | Student defines and characterizes basic terms from the area of natural science that relate to the functioning of the natural environment (knowledge at level of secondary school); basic technologies in production processes, chosen terms from the area of organization and management. |
| 2 | **Skills** | Student is able to interpret changes occurring in the natural environment and work environment, knows how to apply methods of studying phenomena and dependencies between them, as well as he uses logical reasoning in purpose of correlating and evaluating observed phenomena |
| 3 | **Social competencies** | Student is aware of the importance of environmental problems related to man?s work and he is able for active participation in the formation of safe work conditions and reduction of the anthropopressure on natural environment |

## Assumptions and objectives of the course:

The acquisition by the student of knowledge in environmental sciences and macroergonomics. Preparing him to make decisions that cause environmental effects and changes in work conditions. The obtained knowledge, skills and competences will allow him solving problems from the range of adjusting work for correct functioning of the human body and requirements connected with the shaping of a good quality of life, which depends on the natural environment

## Study outcomes and reference to the educational results for a field of study

### Knowledge:

1. Student has particular knowledge on ergonomics, human ecology and protection of the natural environment. - [K1A_W11]

### Skills:

1. Student has the skill to recruit and to interpret information from literature, legal documents and alternative sources and formulate and justify opinions. - [K1A_U01]

2. Student is able to present accurate documentation of problems from the range of safety engineering, conditions at work and environmental safety. - [K1A_U03]

3. Student is able to improve own knowledge and understands the need of long-life learning. - [K1A_U05]

4. Student knows how to plan a realize experiments from the scope of ergonomics of work conditions and environmental conditioning and he is able to make measurements and computer simulations, as well as interpret obtained results and draw conclusions. - [K1A_U08]

5. While formulating solutions for engineer tasks the student is able to notice their system and non technical aspects, especially from the range of ecology and human factor. - [K1A_U10]

### Social competencies:

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1. Student understands the necessity and knows possibilities for lifelong learning and upgrading his professional, personal and social competences; he knows how to justify the need of lifelong learning. - [K1A_K01]
2. Student is aware of the importance and understands non-technical aspects and results of the engineer activity, including its impact on the environment and he realizes the responsibility related to decisions he makes. - [K1A_K02]
3. Student is aware of the responsibility for own work and willingness to comply with the principles of team work and responsibility for cooperative tasks. - [K1A_K03]
4. Student is able to detect causal dependencies In the realization of established objectives and make a ranking of the importance of alternative or competitive tasks. - [K1A_K04]

## Assessment methods of study outcomes

Forming assessment:

a) laboratories: on basis of written tests made before each laboratory class and on basis of report on realized laboratories;

b) project classes: on basis of the assessment of the current progress of the realization of next stages of the project;

c) lectures: on basis of oral responses related to the discussed matter.

Final assessment:

a) laboratories: average grade resulting from evaluations obtained from tests and reports;

b) project classes: the grade is based on the form and quality of the project and its public presentation;

c) lectures: based on the final written test (the student chooses correct responses from the range of several options or he must finish a determined definition).

## Course description

-Lectures

1. Basic notions from the area of ecology, environmental protection and environmental management
2. Relations between man and the environment
3. Environmental protection in face of problems of the pollution of the biosphere
4. The identification of environmental results
5. Life Cycle Assessment method and evaluations of eco-measurements
6. Instruments of the environmental policy
7. The idea and assumptions of the sustainable development
8. Principles, laws and indicators of the sustainable development.
9. Systems of the environmental management like ISO 14000 and others
10. The selection of a system
11. The specification and consulting variants
12. The implementation of the system and audits

Laboratories

- The essence and methods of measurement for parameters of the work environment and of psychomotor abilities of the employee
- Relations between conditions in the environment and technical and economical results of work

Project classes

- Identification of environmental results related to the life cycle of the product

## Basic bibliography:

1. Bezpieczeństwo pracy i ergonomia, t.1 i 2, Koradecka D. (red.), CIOP, Warszawa, 1999
2. Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy, t.1 ? 4, Horst W.M. (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2011
3. Górka K., Poskrobko B., Radecki W., Ochrona środowiska, PWE, Warszawa 2001
4. Jabłoński J., Wybrane problemy zarządzania środowiskowego, Wydawnictwo Politechniki Poznańskiej, Poznań, 1999
5. Kozłowski S., Ekorozwój. Wyzwanie XXI wieku, Wydawnictwo Naukowe PWN, Warszawa 2000
6. Mateja B., Ekologia. Wybrane zagadnienia, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011
7. Tytyk E., Projektowanie ergonomiczne, Wydawnictwo Naukowe PWN, Poznań, 2001
8. Wolański N., Ekologia człowieka, t.1, Wydawnictwo Naukowe PWN, Warszawa 2006

## Additional bibliography:

1. Norms and legal documents specified by the lecturer

## Result of average student's workload

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| **Activity** | **Time (working hours)** |
|---|---|
| 1. Participation in lectures | 30 |
| 2. Participation in laboratories | 30 |
| 3. Participation in project classes | 15 |
| 4. Student?s individual work | 30 |
| 5. Consultations and discussion of test?s results | 20 |

| **Student's workload** | | |
|---|---|---|
| **Source of workload** | **hours** | **ECTS** |
| Total workload | 125 | 6 |
| Contact hours | 95 | 4 |
| Practical activities | 45 | 2 |

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