COURSE DESCRIPTION CARD - SYLLABUS

Course name
Heating and cooling facilities and devices in environmental engineering [N1IŚrod2>OiUCH]

Course

Field of study
Environmental Engineering

Year/Semester
4/8

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
0

Laboratory classes
0

Other
0

Tutorials
20

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge and skills from previous courses: heating, ventilation, air conditioning, energy management. Social competencies: awareness of constant updating and supplementing knowledge and skills, willingness to work in a group

Course objective

The aim of the course is to broaden the knowledge and skills acquired on subjects: heating, ventilation, air conditioning, energy management, and to use in practice the knowledge and skills for the evaluation of technological solutions applied on visited objects. The performance of laboratory exercises along with the preparation of the presentation and report is also intended to help in the preparation of engineering work by paying attention to the elements of scientific research and their components, including literature review, data analysis, description of variants, presentation of results and drawing conclusions. Visits to various environmental engineering objects will allow students to familiarize themselves with the practical technical solutions and real operational problems.

Course-related learning outcomes

Knowledge:

1. The student has basic knowledge of development trends in environmental engineering, including: heating / ventilation / air conditioning / energy management.
2. The student has basic knowledge of life cycle of devices, buildings and technical systems in environmental engineering.
3. The student knows basic methods, techniques, tools and materials applied to solve simple engineering tasks in environmental engineering.

Skills:
1. The student is able to perform preliminary analysis of technological solutions for the objects related to environmental engineering.
2. The student is able to critically analyse existing technical solutions in the field of environmental engineering, in particular devices, objects, systems, processes, services
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3. The student can prepare a report and present it orally (multimedia presentation).
4. The student can draw conclusions.

Social competences:
1. The student is able to work in a group and sees individual responsibility in teamwork.
2. The student is aware of tracking trends and achievements in environmental engineering.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

In order TO COMPLETE THE COURSE, the student is obliged to:
- participate in classes, in particular in the field,
- prepare a written report of field activities with particular emphasis on the assigned task (task problem, to solve which the use of students knowledge, the literature and the information gained from field work is necessery),
- prepare and present oral presentation for all participants,
- pass the final test (minimum 50% of points).

The REPORT is made from each trip by the whole group, by indicating which persons are responsible for the implementation of specific tasks (details will be given during organizational classes). The report should contain a description of the technology and devices used in the visited object, contain technological analysis, indicate the advantages and disadvantages of the adopted solution and, if possible, tips to improve the functioning of the object. It should have a compact form and be written in the correct technical language. The report should include observations and conclusions as well as references to literature.
MULTIMEDIA PRESENTATION - it is prepared by the whole group and applies to each discussed trip. Each participant should appear at least once during the course in front of the group (with part of the selected presentation). Will be assessed: the form of presentation, used vocabulary, discussion of literature review, presentation of the object (technology, devices), conclusions.

THE FINAL ASSESSMENT consists of: 50% - presentations (joint assessments for the group), 50% report

Programme content

As part of the course, students will take a minimum of two study tours. The type of visited object will depend on the availability within the time of laboratory classes. Students are expected to familiarize themselves with the objects of environmental engineering.

Course topics

A detailed schedule of classes - study trips and meetings with experts will be provided at the beginning of the semester.
Classes will include:
- field activities and meetings with experts
- presentations prepared by students regarding activities related to field trips and meetings

Teaching methods

Course implemented in the form of a module. The number of trips may change, meetings with

experts are also possible.
Multimedia presentations, case study, data analysis, variants analysis, discussion.

Bibliography

Basic:
1. Literature from subjects: heating, ventilation, air conditioning, energy management.
2. Detailed literature will be given before the beginning of the semester and adapted to the current state of knowledge

Additional:
1. Detailed literature will be given before the beginning of the semester and adapted to the current state of knowledge

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	20	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00