COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information technology [N1IŚrod2>TI]

Course

Field of study
Environmental 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
compulsory

Number of hours

Lecture
20

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

1. Knowledge: Basic knowledge of computer science in high school. 2. Skills: Operating a personal computer, including basic knowledge of office programs. 3. Social competences: Awareness of the need to constantly update and supplement knowledge and skills.

Course objective

The aim of the course is to familiarize the student with the use of IT tools and techniques for information processing. Acquiring knowledge about the basic principles of computer construction and operation. The subject covers the issues of collecting, collecting, storing and processing information as well as performing engineering calculations in the field of environmental engineering.

Course-related learning outcomes

Knowledge:
1. The student understands the principles of storing and processing data in computer systems - [KIS_W07]
2. The student knows the use of spreadsheets in engineering activities
3. The student knows the basic syntax of the selected high-level programming language

5. The student knows the basic programs for engineering calculations

Skills:
1. The student uses computer techniques to collect and process data and information
2. The student is able to select an application appropriate for a task in the field of environmental engineering
3. The student can implement a simple algorithm and create functions
Social competence
1. The student is aware of responsibility for his/her own work.
2. The student is oriented towards obtaining information about new information processing tools

Social competences:
-

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Multiple choice test with open questions, conducted during the last class. Passing threshold: 50%. Detailed scoring criteria and grading scale are provided before passing the exam.

Programme content

The subject covers basic issues related to the use of computer methods in engineering calculations. The content discussed during the lecture covers issues such as: hardware structure and computer architecture, review of IT tools and techniques, collecting and storing data in databases, data processing using spreadsheets, basics of programming in a selected high-level programming language and AI artificial intelligence tools.

Course topics

The topics of the classes include:
1. The role of information technology in engineering
2. Hardware structure and computer architecture
3. Review of IT tools and techniques
4. Data collection and storage, databases and database management systems
5. Data processing using spreadsheets:
- basic operations and formula creation,
- advanced functions and in spreadsheets,
- data analysis and data visualization.
6. Basics of programming in a selected high-level programming language:
- introduction to programming: languages, compilers, interpreters,
- basics of algorithms, structures and types of data,
- creating simple programs,
- object-oriented and structured programming
- examples of engineering applications of programming
7. Selected AI artificial intelligence tools.

Teaching methods

Traditional lecture with elements of case study analysis and multimedia presentation.

Bibliography

Basic:
1. Bell A., Python : uczymy się programowania. Helion, 2019
2. Brookshear J. G. , Brylow D., Informatyka w ogólnym zarysie. Wydawnictwo Naukowe PWN, 2022
3. Frye Curtis D., Microsoft Excel 2013 Krok po kroku. APN Promise, 2013
4. Matthes E., Python : instrukcje dla programisty. Helion, 2024/2020
5. Pomoc/dokumentacja programów Microsoft Excel/LibreOffice/Google Sheets
6. Sikorski W. Excel dla studentów. WITKOM (Salma Press), 2023
7. Sikorski W., Wykłady z podstaw informatyki. WITKOM (Salma Press), 2022

Additional:
1. Kawa R., Lembas J. Wstęp do informatyki. Wydawnictwo Naukowe PWN, 2017.
2. Reis J., Housley M. Inżynieria danych w praktyce : kluczowe koncepcje i najlepsze technologie. Helion, 2023.

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