Cracow University of Technology

Course syllabus

binding for the doctoral students of the CUT Doctoral School commencing their studies in the academic year 2022/2023

Information on the course

Name of the course in Polish	Pomiary ilościowe/jakościowe w środowisku wodnym, ściekowym
Name of the course in English	Quantitative / qualitative measurements in the water and sewage environment
Number of the ECTS points	1
Language of instruction	Polish
Category of the course	Elective
Field of education	Engineering and Technology
Discipline of education	Environmental engineering, ,mining and power engineering
Person responsible for the course Contact	Jadwiga Królikowska, *doctor hab.*, MSc in Eng. Professor of CUT Jadwiga.krolikowska@pk.edu.pl

Type of course, number of hours in the study programme curriculum

Semester	Credit type (G / NG)*	Lecture	Practical class	Laboratory	Computer Laboratory	Project class	Seminar
2, 3, 4, 5, 6	G	15	0	0	0	0	0

*G – graded credit, NG – non-graded credit

Course objectives

Code	Objective description
Objective 1	Introduction to the current requirements for measuring the quantity and quality of water and sewage
Objective 2	Introduction to the precise measuring technique in water supply and wastewater disposal systems

Learning Outcomes

Code	Description of the learning outcome adjusted to the specific characteristics of the discipline	Learning outcome symbol in the CUT SD	Methods of verification
OUTCOMES RELATED TO KNOWLEDGE			
EUW1	The doctoral student knows the legal conditions for measuring the quantity and quality of water and sewage	E_W01 E_W02	Involvement in class activities, paper
EUW2	The doctoral student knows the devices that meet the applicable regulations and standards regarding water intake / quality and billing measurement of flow / quality of sewage	E_W01	Involvement in class activities, presentation
OUTCOMES RELATED TO SKILLS			

EUU1	The doctoral student is able to select a measuring device and find a solution for a specific measuring point so that the specific measurement requirements (quantitative / qualitative) and applicable regulations are met	E_U01	Discussion, a paper and a written test
EUU2	The doctoral student is able to present the system of the reported results (along with an analysis) of the measurements of the amount of groundwater and surface water collected as well as the quantity and quality of sewage discharged into water or into the ground.	E_U01	Discussion
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student is able to refer to measurement systems known in the literature and on the market that is related to the implementation of the doctoral thesis and justify the choice of the adopted solution.	E_K03 E_K01	Discussion

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	Water services in water law	EUW1, EUW2	3
W2	Measurement of the flow volume in floating mirror and under pressurized pipes - factors influencing its accuracy	EUW1, EUW2	2
W3	Measuring instruments or measuring systems for measuring the amount of water and sewage	EUW2, EUU3, EUK1	3
W4	Measuring instruments or measuring systems for measuring the quality of water abstracted and sewage discharged	EUW2, EUU3 EUK1	3
W5	Benefits of using remote readings of water meters in a stationary system	EUW2, EUU2, EUK1	2
W6	Reduction of water losses in the water supply network by water meter management	EUW2, EUU2, EUK1	2

The ECTS points statement

WORKING HOURS SETTLEMENT	
Type of activity	Average number of hours (45 min.) dedicated to the completion of an activity type
SCHEDULED CONTACT HOURS WITH THE ACADEMIC TEACHER	
Hours allotted in the syllabus	15
Consultations	1
Examination / course credit assignment	2
HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER	
Independent study of the course contents	8
Preparation of a paper, report, project, presentation, discussion	4

ECTS POINTS STATEMENT	
Total number of hours	30
The ECTS points number	1

Preliminary requirements

No.	Requirements
1	Knowledge of the dynamics of Newtonian fluids
2	Knowledge of the English language

Course credit assignment conditions / method of the final grade calculation

No.	Description
	COURSE CREDIT ASSIGNMENT CONDITIONS
1	80% attendance in class.
2	Delivery of a paper.
3	Written test
	METHOD OF THE FINAL GRADE CALCULATION
	Credit assigned on the grounds of weighted average of the result of the written test and the delivery of the paper.

Additional information

None

The course reading list

1	Erb H.G., Water and wastewater flow measurement technique, 1999, Seidel-Przywecki Publishing House
2	Work edited by Michalski R., Water safety. Problems and challenges, 2019, Elamed MEDIA GROUP