COURSE DESCRIPTION CARD - SYLLABUS

Course name
ADVANCES IN WASTEWATER TREATMENT [S5ISGIE>POS]

Course

Proposed by Discipline
–

Year/Semester
2/3

Level of study
Doctoral School

Course offered in
English

Form of study
full-time

Requirements
elective

Number of hours

Lecture
8

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

dr hab. inż. Zbysław Dymaczewski prof. PP
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Prerequisites

Basic knowledge in mathematics, chemistry, biology, physics, fluid mechanics.

Course objective

Introduction to wastewater treatment technology. Getting knowledge on wastewater characteristics, aim and importance of wastewater treatment. Historical view on changes in wastewater treatment technologies and requirements. Future vision of wastewater treatment.

Course-related learning outcomes

Knowledge: P8S_WG, P8S_WK,
Skills: P8S_UW,
Social Competences: P8S_KK, P8S_KR

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture activity checkup
Written final test (with possible oral evaluation)

Programme content

Characteristics of municipal wastewater (types of wastewaters, composition).
Historical view on wastewater treatment, important periods.
Aim of wastewater treatment.
Typical WWTP configuration - unit processes, facilities, technological parameters (wastewater treatment, sewage sludge management).
Simple and advanced technologies.
Change in paradigm - the future of municipal wastewater treatment plants.

Course topics

1. Characteristics of municipal wastewater, Aim of wastewater treatment. Historical view.
2. Current solutions. Activated sludge - typical WWTP configuration - unit processes, facilities, technological parameters.
3. Simplified solutions. Advanced treatment technologies. Sewage sludge management.
4. New challenges and requirements. Change of the role of WWTP. The future of municipal wastewater treatment.

Teaching methods

Lecture, multimedial presentation.

Bibliography

Basic:
Metcalf and Eddy, Wastewater Engineering: Treatment and Reuse 4th Edition, McGraw Hill, 2003
Additional:
Guanghao Chen; Mark C.M. van Loosdrecht; George A. Ekama; Damir Brdjanovic. Biological Wastewater Treatment: Principles, Modelling and Design, IWA Publishing 2023

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	8	0,00
Doctoral student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation)	42	2,00