Course title: **Wastewater technology** Technologia ścieków		
Field of study: **Environmental engineering**		
Type of study: **full-time studies**	The level of education: **first-cycle studies**	Education profile: **general academic**
Type of subject: **optional**	Semester: **VI**	Course language: **English**
Course type: **lecture, laboratory**	Number of hours: **30L, 30Lab**	ECTS Credit points: **7**

SYLLABUS

COURSE CONTENT

Form of classes - lectures	**Hours**
Historical background of wastewater treatment. Municipal and industrial watsweter quality nad inflow characteristics	2
Sewage collection systems.	2
Legislation.	2
Overview of wastewater treatment methods.	2
Mechanical wastewater treatment.	2
Microbiological processes of wastewater treatment. Aerobic vs. Anaerobic processes.	2
Biological wastewater treatment - attached growth processes. Technical parameters.	2
Biological wastewater treatment - activated sludge. Technical parameters.	2
Biological nutrient removal.	4
How to control wastewater treatment plants - introduction.	3
Waste management in wastewater treatment plants. Sewage sludge	2
Small wastewater treatment plants.	2
Advanced methods of wastewater treatment.	2
Final test	1
Form of classes - laboratory	**Hours**
Lab safety training	1
Analysis of selected parameters of wastewater.	4
Treatment of wastewater with trickling filters. Technical parameters.	4
Treatment of wastewater on disc filters	4
Precipitation of phosphorus.	4
Treatment of wastewater with activated sludge. Technical parameters.	4
Biological nutrient removal with activated sludge method.	4
Visit to a municipal wastewater treatment plant.	5

COURSE STUDY METHODS

1. blackboard
2. multimedia presentation
3. laboratory setup
4. the literature and instructions for laboratory classes

METHODS OF ASSESMENT (F - formative; S - summative)

F1. - activity in classes
F2. - evaluation of work during laboratory exercises
S1. – final test or test before each laboratory experiment
S2. - evaluation of the laboratory reports

STUDENT WORKLOAD

Form of activity	Workload (hours)
Participation in lectures	29 h
Participation in classes	- h
Laboratory	30 h
Participation in project classes	-h
Participation in seminar	-
Preparation course on e-learning	-
Test	1 h
Entrance test for laboratory classes	- h
Project's defence	-
Exam	-
Consultation hours	30 h
DIRECT TEACHING, hours/ ECTS	**90 h / 3,6 ECTS**
Preparation for tutorials	- h
Preparation for laboratories	55 h
Preparation for projects	-
Preparation for seminars	-
Preparation for e-learning classes	-
Participation in e-learning classes	-
Working on project	-
Preparation for tests	30 h
Preparation for exam	-
SELF-STUDY, hours/ ECTS	**85 h / 3,4 ECTS**
TOTAL (hours)	**175 ∑**
TOTAL ECTS	**7 ECTS**

PRIMARY AND SUPPLEMENTARY TEXTBOOKS

Grady L., et al., Biological Wastewater treatment, CRC Press, 2011 or later edition
Spellman F.R., Handbook of Water and Wastewater Treatment Plant Operations, Lewis Publishers, 2003

SUBJECT COORDINATOR (NAME, SURNAME, E-MAIL ADDRESS)

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