Politechnika Krakowska
im. Tadeusza Kościuszki

FACULTY: ENVIRONMENTAL ENGINEERING

COURSE TITLE: WATER AND WASTEWATER TREATMENT

Number of contact hours: 90
Duration: 1 semester (fall)
ECTS credits: 9
Programme description:

The course is designed to give a broad theoretical and practical foundation within water and wastewater treatment technology. The design and operational issues related to water and wastewater treatment processes and systems will be analyzed in the context of sustainable resource management, greenhouse gases emission and energy efficiency. In the area of water technology the topics to be covered include legal and sanitary requirements regarding drinking water quality, water treatment processes and equipment, technological layouts and practical aspects of water treatment plant operation. In regard to wastewater technology the presented topics include physical, chemical and biological processes used for wastewater treatment, optimal design of a wastewater treatment train, sewage sludge processing and utilization, energy recovery from biogas and application of computer simulation for wastewater treatment plant design and optimization. Following the potential students' interests, other topics can also be explored, such as water reuse, energy recovery from wastewater or application of membrane filtration in wastewater treatment. In addition to lectures the course will utilize highly interactive teaching methods in form of group assignments, projects, labs and computer labs, and, if feasible, a technical trip.

Course type (hours): lectures (40 h), board classes (15 h), laboratory (15 h), computer lab (6 h), project classes (14 h)

Literature:

[1] Metcalf and Eddy “Wastewater Engineering”, 4th ed., McGraw-Hill, 2003
2) Spellman F. R. “Handbook of Water and Wastewater Treatment Plant Operations”, 3rd ed. CRC Press, 2013
3) Mikosz J., “Introduction to wastewater treatment” (under preparation)

Assessment method

1) Component grades

- Lectures: Written examination 60%

- Board classes: on-going evaluation of the student's performance 10%
- Laboratory: quality of the reports (accepted/not accepted)
- Design classes: design calculations for water and wastewater systems (for the wastewater part together with the results of computer lab) 30%

2) Final grade: Weighted average of the component grades: Final grade = (board classes grade *0,1) + (design classes grade *0,3) + (examination grade * 0,6)

3) Requirements for obtaining course credits are: credits for laboratory, board classes and design classes as well as a positive examination grade

Lecturer:
dr hab. inż. Stanisław M. Rybicki, prof. PK
dr hab, inż. Jerzy Mikosz

Contact person (e-mail): dr hab. inż. Jerzy Mikosz (jmikosz@pk.edu.pl)