COURSE DESCRIPTION CARD - SYLLABUS

Course name
Water Supply Systems Laboratories [N1IŚrod2>LSZwW]

Course

Field of study
Environmental Engineering

Year/Semester
4/8

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
20

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr inż. Tomasz Schiller
tomasz.schiller@put.poznan.pl

Lecturers

Prerequisites

Knowledge of major subjects: fluid mechanics, water supply, water technology in field discussed as part of the first cycle of studies. Awareness of constantly updating and supplementing knowledge and skills, willingness to work in a group.

Course objective

The aim of the course is to expand a knowledge and skills acquired in subjects of fluid mechanics, mechanical structures, water supply, water technology and to use this knowledge and skills in practice in exercises. The performance of the exercises along with a report preparation sholud also help in a preparation of an engineering thesis by paying attention to elements of research and its components, among others: literature review, description of variants, presentation of results and drawing conclusions.

Course-related learning outcomes

Knowledge:
1. The student is knowledgeable about changing trends in water supply systems
2. The student has knowledge of modern system control elements
3. The student has knowledge of tools and methodologies used to conduct experiments

4. The student has knowledge in field of research conducted at the Institute of Environmental Engineering and Building Installations, PUT

Skills:
1. The student is able to plan an experiment based on a literature review taking into account economic, ecological or energy aspects
2. The student is able to plan solution variants and assess their impact on a final result
3. The student is able to conduct an experiment on a research stand that reproduces a real object, using appropriate tools
4. The student is able to present results of experiments orally and in writing
5. The student is able to draw conclusions from experiments carried ou

Social competences:
1. The student is able to work in a group and sees individual responsibility in teamwork
2. The student sees a need to update knowledge in a field of water supply systems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratories: Performing at least 2 laboratory exercises from the proposed ones, making an oral presentation for all course participants and preparing a report on experiments carried out. A final grade consists of: 50 percent of points for results and scope of exercise presentation and 50 percent of points for report on experiments carried out.
Rating scale: 0 - 50% 2,0; 51 - 60% 3,0; 61 - 70% 3,5; 71 - 80% 4,0; 81 - 90% 4,5; 91 - 100% 5

Programme content

The module program allows you to supplement knowledge and skills related to selected devices and processes in the field of water supply systems concerning primarily aspects related to energy efficiency and elements of computer modeling useful in engineering practice.

Course topics

Laboratories: Students complete a minimum of two laboratory exercises. A choice of an exercise will take place during a first class from a set of 4-5 proposals. Laboratory exercises will include issues discussed in major subjects and tasks related to scientific research conducted in IIŚiIB PP.
Example topics:
1. Evaluation of a performance and efficiency of centrifugal pumps.
2. Comparison of energy efficiency of a pump unit powered by a synchronous and asynchronous motor.
3. Modelling of a regulated pumping system.
4. Water intakes.
Topics will be given before a start of a semester.

Teaching methods

Experiment method; Practical exercises; Discussion.

Bibliography

Basic:
1. Jędral W., Efektywne energetycznie układy pompowe, Oficyna Wydawnicza Politechniki Warszawskiej, 2018
2. Strączyński M., Pakuła G., Urbański P., Solecki J., Podręcznik eksploatacji pomp w wodociągach i kanalizacji, Seidel-Przywecki, 2017.

Additional:
1. Rossman, L., H. Woo, M. Tryby, F. Shang, R. Janke, T. Haxton, EPANET 2.2 User Manual, U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-20/133, 2020 (https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=348882&Lab=CESER)
Other basic and supplementary literature will be provided at the beginning of a semester..

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