
Course title: RELIABILITY AND SAFETY OF ENGINEERING SYSTEMS

ECTS credit allocation (and other scores): 2.0

Semester: autumn

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 30

Course coordinator/ Department and e-mail: Renata Augustyniak D.Sc./Department of Water Protection Engineering and Environmental Microbiology; rbrzoza@uwm.edu.pl

Type of classes: classes

Substantive content

CLASSES: Definition of reliability of water supply system and sewerage system. Reliability indicators – their selection for the evaluation of environmental engineering systems. The basics in the theory of probability and statistics for a failure analysis of engineering systems. The assessment of reliability of environmental engineering systems. A single-parameter and double-parameter methods of assessment of reliability of water supply systems and sewerage systems. Demanded level of reliability and system reliability increasing methods. Criteria of reliability of engineering systems evaluation.

LECTURES: none

Learning purpose: Acquainting with the principles of assessing the operational reliability of devices used in environmental engineering and risk assessment related to the operation of environmental engineering facilities.

On completion of the study programme the graduate will gain:

Knowledge: Graduate defines criteria for assessing the reliability of engineering systems and characterizes reliability indicators when evaluating the performance of environmental engineering systems.

Skills: Graduate assesses the operational reliability of devices used in environmental engineering. He/she applies elements probability calculus and descriptive statistics in the failure rate analysis of engineering systems. He/she identifies threats and assesses the risk related to the malfunctioning of engineering structures

Social Competencies: Graduate is aware of the dangers and risks associated with the improper functioning of facilities, shows a responsible attitude for failure-free operation of engineering systems and is able to think and be creative and entrepreneurial to prevent them from happening.

Basic literature: Bo Bergman, Elja Arjas, Marvin Rausand, Bent Natvig, Kjell A. Doksum and Tore Schweder, On Reliability Theory and Its Applications [with Discussion and Reply]. Scandinavian Journal of Statistics, 1985, Vol. 12, No. 1 (1985), pp. 1-41

Bajer J., Iwanejko R., Kapcia J., Niezawodność systemów wodociągowych i kanalizacyjnych w zadaniach, Wydawnictwo PK, 2006

Kwietniewski M., Roman M., Kloss-Trębaczkiwicz H., Niezawodność wodociągów i kanalizacji, wyd. Arkady, 1993
Supplementary literature: none

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.71



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Student's independent work: 0.29