

## MODULE INFORMATION SHEET

<b>Name of Module Unit</b>	<b>Reliability and Safety of Engineering Systems</b>
Name in polish language	Niezawodność i bezpieczeństwo systemów inżynierskich
Module type	compulsory / <b>elective</b>
Form of studying	full-time day courses
Level of study	graduate course (M.Sc. level)
Type of study ( for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environment Protection Engineering
Responsible department	Dept. of Water Supply and Wastewater Management
Responsible person	Prof. dr hab. inż. Marian Kwietniewski

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
1	30	-	-	-	-	2

### Learning outcomes (knowledge, skills, competences)

To acquaint students with basic reliability, safety and risk of engineering systems and objects. How to use science applications in reliability theory, as well as safety and risk rules to solve a problems appearing in designing, construction, maintenance and operation of engineering objects.

To prepare students to solve individually an engineering tasks in reliability, safety and risk theories.

### Prerequisites

Mathematics, Statistics, Basics of Water Supply Systems, Wastewater Systems, Heating and Cooling Systems

### Rules for integrated grade setting

The examination mark

### Recommended readings

1. E. Zio: *An Introduction to the basics of Reliability and Risk Analysis* (Series on Quality, Reliability and Engineering Statistics Vol. 13) ), World Scientific, 2007 New Jersey-London
2. M.T. Todinov: *Reliability and Risk Models: Setting Reliability Requirements*. John Wiley & Sons, Chichester 2005
3. E. Zio: *Computational Methods for Reliability and Risk Analysis* (Series on Quality, Reliability and Engineering Statistics Vol. 14), World Scientific, 2009 New Jersey-London

## Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	Introduction to theory of reliability. Reliability models of engineering systems. Reliability measures and indices. Reliability assessment methods of water supply and wastewater systems, heating and cooling systems.	10	S
2	Reliability tests. Reliability functioning criteria of engineering systems. technical objects. Basic of risk assessment of systems functioning incorrect.	10	S
3	Terms and methods of safety assessment. Basics of risk and safety management.	10	S
<b>Total</b>		<b>30</b>	<b>hours</b>

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

### Lecturers

Prof. dr hab. inż. Marian Kwietniewski Dr inż. Katarzyna Miszta-Kruk
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### Assessment method

The subject is assessed on the basis of examination mark.
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