

**DOCTORAL SCHOOL OF WROCLAW UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

SUPERVISOR DECLARING/CONDUCTING COURSE: Andrzej Szczurek
DEPARTMENT: Faculty of Environmental Engineering W7
SCIENTIFIC DISCIPLINE: Environmental Engineering, Mining and Energy

COURSE CARD

Course name in Polish: ...Miernictwo.....

Course name in English: ...Metrology.....

Course language Polish *

University-wide general course type*:

The course is intended for all PhD students: YES / NO

1) BASIC COURSE

~~2) SPECIALIST COURSE~~

~~3) SEMINAR~~

~~4) HUMANISTIC COURSE~~

~~5) LANGUAGE~~

Subject code: IGQ100028W

* delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)	30			
Grading	Exam	Exam	Oral presentation	Exam, inspection, evaluation classes
Number of ECTS points	0			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge concerning physical and chemical properties of the matter.

COURSE OBJECTIVES

C1 The course provides the knowledge about the principles of the metrology of physical and chemical quantities

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PROGRAM CONTENTS

Form of classes – lecture (Lec)		Number of hours
Lec1	Introduction to metrology	2
Lec2, Lec3	Definition of a measurement, measurement result, measurement error, uncertainty	4
Lec 4	Stages of a measurement process	2
Lec 5	Measurement principles, measurement procedure, measurement method	2
Lec 6, Lec 7	Features of measurement methods	4
Lec 8	Validation of measurement methods	2
Lec 9	Definition of measuring tools, measuring instruments and auxiliary equipment	2
Lec 10, Lec 11	Characterization of measuring instruments, standards and auxiliary equipment	4
Lec 12	Legalization and certification	2
Lec 13 -Lec 15	Calibration and metrological control	6
Total hours:		30

TEACHING TOOLS USED

N1. Information lecture
N2. Subject lecture.

ACHIEVED SUBJECT LEARNING OUTCOMES

Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	P8S_WG	Student has knowledge at an advanced level of discipline and subject matter relevant to the field of research carried out, including the most recent research findings and scientific achievements

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] W. Nawrocki, Sensory i systemy pomiarowe, Wydawnictwo Politechniki Poznańskiej, 2006
[2] J. Piotrowski (red.) Pomiary, WNT, 2009

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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