

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

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE:
DEPARTMENT

COURSE CARD

Course name in Polish: ... Seminarium automatyki napędu elektrycznego
i elektromechatroniki

Course name in English: ... Seminar of controlled electrical drives and
electromechatronics

Course language Polish / English*

University-wide general course type*:

3) seminar in discipline or interdisciplinary: ...**automatics, electronics and electrical engineering**

Subject code: AEQ100161S * delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)			15	
Grading	Exam	Exam	Oral presentation	Exam, inspection, evaluation classes

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

In terms of knowledge:

1. Has the ordered and theoretically founded knowledge necessary to carry out a doctoral dissertation in the field of automation of electric drive, electromechanical energy conversion, measurement and electromechatronic systems

In terms of skills:

1. Is able to properly apply his knowledge to the implementation of a doctoral dissertation in the scope of the above-defined issues.

In the field of social competences:

1. Understands the need and knows the possibilities of continuous education, raising professional, personal and social competences.

COURSE OBJECTIVES

C1 - Expanding knowledge in the field of automation of electric drives, electrical machines, metrology, electromechatronics through participation in an interdisciplinary discussion.

C2 - Improvement of skills related to the presentation of results of own calculations, experimental studies and analyzes carried out as part of a doctoral thesis.

C3 - Acquiring the ability to critically evaluate the results, analysis of the presented interpretations and conclusions resulting from the implementation of scientific research.

C4 - Acquisition of interpersonal skills related to active participation in the discussion of the presented results of multidisciplinary research.

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PROGRAM CONTENTS

Form of classes – seminar (Sem)		Number of hours
Sem1	Getting to know the program, requirements and how to pass the course	1
Sem2- Sem15 ...	Presentations of research results related to the implementation of doctoral dissertations in the field of: control of drive automation systems, estimation of hard-to-measure drive system variables with DC and AC motors, signal processing in control systems, optimization, modeling and identification of electromechanical energy converters, methods and systems measuring electrical and non-electrical quantities, application of artificial intelligence methods to identify, control and diagnose electromechatronic systems.	14
Total hours:		15

TEACHING TOOLS USED

N1. Paper, multimedia presentation.
N2. Substantive discussion.

ACHIEVED SUBJECT LEARNING OUTCOMES

Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	P8U_W –knows and understands the world’s scientific and creative heritage (control systems of converter-fed drives, estimation of hard-to-measure state variables of drive systems, signal processing in control systems, optimization, modeling and identification of electromechanical energy converters, methods and measurement systems of electrical quantities and non-electric, application of artificial intelligence methods to identify, control and diagnose electromechatronic systems) and its implications for practice.	Student competently quotes other authors during presentation of research results and in articles published and prepared for publication in peer-reviewed scientific journals, peer-reviewed materials from international scientific conferences.
Skills	P8U_U – is able to analyse and creatively synthesize scientific and creative achievements in order to identify and solve research, innovation and creative problems; create new elements of this achievements-independently plan his/her own development and inspire others to develop-participate in the exchange of experience and ideas.	Student is able to classify scientific publishers, including scientific journals, and scientific achievements according to accepted rules.
Skills	P8S_UW – can critically analyse and evaluate the results of scientific research, expertise and other creative work and their contribution to knowledge development.	Student is able to creatively interpret the results obtained and to search for their

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		application.
Social competence	P8S_UK – is able to communicate on specialist topics to the extent that they enable an active participation in the international scientific community-disseminate research results, including in popular forms-initiate debates; can disseminate research results, including in popular forms-initiate debates.	Student is able to prepare and present an oral and multimedia presentation on the implementation of the research and to lead a discussion on the presented presentation.

PRIMARY AND SECONDARY LITERATURE
Current scientific literature with particular emphasis on issues raised in doctoral dissertations carried out by participants of the seminar, including scientific journals, conference materials, scientific reports, internet databases, etc.
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)
Prof. dr hab. inż. Teresa Orłowska-Kowalska, teresa.orlowska-kowalska@pwr.edu.pl