DOCTORAL SCHOOL OF WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE:
dr hab. Przemysław Boratyński
DEPARTMENT of Chemistry

COURSE CARD

Course name in Polish: Zastosowania chemii metaloorganicznej w syntezie
Course name in English: Synthetic applications of metaloorganic chemistry
Course language english

Specialized courses for PhD students receiving education in discipline*: ……..……..……
1) specialized course in discipline: **chemistry**

Subject code: NCQ100169W

	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

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Acquired knowledge of organic chemistry
2. Acquired knowledge of inorganic chemistry including basic understanding of coordination chemistry

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COURSE OBJECTIVES

C1 To familiarize students with the structure of metalorganic compounds and classical as well as contemporary applications thereof
C2 To identify relationships between the choice of ligands and reactivity of transition metal complexes entailing metal-carbon bonds
C3. To acquaint students with metalorganic reactions with stoichiometric and catalytic transition metal compounds

PROGRAM CONTENTS

Form of classes – lecture (Lec)		Number of hours
Lec1	Relevant principles of coordination chemistry, definitione of the nature of ligands and considerations for their selection	4
Lec2	Fundamental information on metalorganic compounds	2

Lec3	Synthesis, structure, and reactivity of alkali metalorganic compounds	4
Lec4	Synthesis, structure, and reactivity of main group metaloorganics	4
Lec5	Structure and features of transition-metal metaloorganics	5
Lec6	Stoichiometric reactions of metalorganic compounds	2
Lec7	Components of metalorganic reaction mechanisms	5
Lec8	Examples of organic transformations utilizing catalytic metalorganic compounds	4
	Total hours:	**30**

TEACHING TOOLS USED
N1. Lecture with a whiteboard/blackboard and a multimedia presentation

ACHIEVED SUBJECT LEARNING OUTCOMES		
Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	**P8U_W**	student competently quotes other authors in articles published and prepared for publication in peer-reviewed scientific journals, peer-reviewed materials from international scientific conferences, and in book editions preceding the preparation of a doctoral dissertation
Knowledge	**P8S_WG**	Student has an advanced knowledge fundamental to a field relevant to his/her research, including the most advanced methods of research and verification of results achieved 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
Skills	**P8U_U**	Student is able to classify scientific publishers, including scientific journals, and scientific achievements according to accepted rules for: - journals included in international databases Scopus and Web of Science - impact factor (if), - quoting, - Hirsch index, - i10-indicator - have knowledge of current specification of active scientific journals in Scopus and Web of Science databases and their associated disciplines, as defined in the new classification of fields and disciplines
Skills	**P8S_UW**	Student is able to creatively interpret the results obtained and to search for their application is prepared to intensify research with commercial potential
Skills	**P8S_UW**	student has scientific and technological skills relevant to methods and methodology of conducting scientific research and critical evaluation of the results obtained student is able to create and conduct independent

		research, including outside the educational institution

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] F. Pruchnik *Chemia metaloorganiczna : Pierwiastki przejściowe*, PWN, Warszawa 1993.
[2] L. S. Hegedus, B. C. G. Söderberg *Transition Metals in the Synthesis of Complex Organic Molecules*, University Science Books, Susalito CA 2010.

SECONDARY LITERATURE:

[1] M. B. Smith *March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure,* wyd. 7, Wiley 2013.
[2] F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann *Advanced Inorganic Chemistry*, wyd. 6. Wiley 1999.

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

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