

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

**SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE:** Roman Gancarz  
**DEPARTMENT:** Chemical Department  
**SCIENTIFIC DISCIPLINE:** Chemical Sciences

**COURSE CARD**

**Course name in Polish:** Stereochemia  
**Course name in English:** Stereochemistr  
**Course language Polish / English\***  
**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:** NCQ100113W

\* delete as applicable

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

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Organic Chemistry

**COURSE OBJECTIVES**

C1 Symmetry of the molecules  
 C2 Isomerism and their consequences  
 C3 Symetry in spectroscopic data analysis

**PROGRAM CONTENTS**

<b>Form of classes – lecture (Lec)</b>		Number of hours
Lec1	Molecular structure – short historical overview	2
Lec2	Symetry elements and operations	2

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Lec3	Point groups	2
Lec 4	Introduction to group theory	2
Lec 5	Group theory in analysis of spectra data	2
Lec 6	Symmetry in analysis of NMR data	2
Lec 7	Spin system nomenclature inNMR	2
Lec 8	Dessymetrisation of teatreadr- asymmetric carbon atom	2
Lec 9	Chirality and stereogenicity	2
Lec 10	Chiral high symmetry molecules	2
Lec 11	Pseudorotation	2
Lec 12	Residual stereoisomerism, molecular gears	2
Lec 13	Ciclostereoisomerism	2
Lec 14	Stereochemistry of dynamic molecules	2
Lec 15	Chiral descriptors	2
	Total hours:	<b>30</b>

<b>Form of classes – foreign language course (Lng)</b>		Number of hours
Lng1		
Lng2		
Lng3		
..		
	Total hours:	

<b>Form of classes – seminar (Sem)</b>		Number of hours
Sem1		
Sem2		
Sem3		
...		
	Total hours:	

<b>Form of classes – mixed forms (mix)</b>		Number of hours
Mix1		
Mix2		
Mix3		
...		
	Total hours	

<b>TEACHING TOOLS USED</b>
N1. Power point presentations N2. N3.

<b>ACHIEVED SUBJECT LEARNING OUTCOMES</b>		
Type of learning outcome	Code of learning	Assessment of learning outcome

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	outcome	
Knowledge	<b>P8S_WG</b>	student has a sound knowledge of basic subjects such as mathematics, physics, chemistry or others - 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
Knowledge		
...		
Skills	<b>P8U_U</b>	- 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
Skills		
...		
Social competence		
Social competence		
...		

**PRIMARY AND SECONDARY LITERATURE**

**PRIMARY LITERATURE:**

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- [1] Kettle Sidney Francis Alan, Symmetry and structure
- [2] Eliel, Ernest L., Stereochemistry of organic Compounds
- [3] Eames Jason, Stereochemia
- [4] Kurt Mislow, Introduction to stereochemistry

**SECONDARY LITERATURE:**

- [1] Hargitai Istvan, Symmetry through the eye of chemist
- [2] Carter Robert Molecular symmetry and group theory
- [3] Jaffe Hans, Symmetry in chemistry

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

**Prof. dr hab. Roman Gancarz, roman.gancarz@pwr.edu.pl**