

<b>Course title</b> Biometale / Biometals		<b>ECTS code</b> 13.3.0400	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemistry	Master	Full-time studies	
<b>Teaching staff</b> Prof. dr hab. Mariusz Makowski			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b> 1	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> lecture		classes - 15 h tutorial classes – 2 h student's own work – 8 h	
<b>B. The realization of activities</b> in-class learning		Total: 25 h - 1 ECTS	
<b>C. Number of hours</b> 15 h lecture			
<b>The academic cycle</b> Second year, winter semester			
<b>Type of course</b> obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b>  Lecture with multimedia presentation		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
		<b>A. Final evaluation, in accordance with the UG study regulations</b> course completion (with a grade)	
		<b>B. Assessment methods</b> Test with both open and closed type of questions	
		<b>C. The basic criteria for evaluation or exam requirements</b>  • positive evaluation of the written exam consisting of 10-20 questions covering the issues listed in the program contents; answers to questions will require providing answers within the scope of the assumed learning outcomes.	
<b>Required courses and introductory requirements</b> inorganic chemistry, coordination chemistry, basic and fundamental knowledge in inorganic and coordination chemistry			
<b>Aims of education</b> • make students familiar with problems combining chemistry, biology and medicine • introduction of fundamental knowledge in particular from biochemistry (such as a role of bioelemnts as iron, copper, zinc, cobalt, manganese, nickel, and chromium in living organisms).			
<b>Course contents</b> Lecture topics: chemistry of selected metals and their importance in biology, medicine and the environment. Their absorption, storage and function in bacteria, plants, in living organisms.			

### **Bibliography of literature**

#### **A. Literature required to pass the course**

L. Stephen, B. Jeremy – Podstawy chemii bioinorganicznej  
R. M. Roat-Malone – Bioinorganic Chemistry: A Short Course  
E. Ochiai – Bioinorganic Chemistry: a survey  
B. Literatura uzupełniająca  
Bioinorganic Chemistry and Applications – czasopismo naukowe

#### **B. Extracurricular readings**

### **Knowledge**

Knows and understands rules, concepts and phenomena combining chemistry, biology and medicine; uses terminology and chemical symbolism related to the role of metals in biology, medicine and the environment; understands biochemical phenomena and processes, including specialized concepts.

### **Skills**

Reads and analyzes information presented in the form of: chemical text, chart, diagram, drawing; completes the missing information on the basis of the table, chart, diagram, drawing and text; processes information according to the given rules; constructs diagrams of biochemical processes; formulates descriptions of the presented phenomena and processes; describes in words or by means of a drawing (scheme) the course, phenomena or processes; recognizes cause-and-effect relationships that occur in biochemical processes depending on the conditions under which complicated reactions occur; explains the course of phenomena encountered in everyday life, using chemical knowledge in correlation with other natural sciences; interprets the information and formulate conclusions and justifies opinions.

### **Social competence**

understands the need for further education. is able to precisely formulate questions that help deepen one's understanding of a given topic or find missing elements of reasoning; understands and appreciates the importance of intellectual honesty in the actions of their own and other people; acts ethically; understands the need for popular presentation of selected issues in chemistry to non-specialists; can independently search for information in literature, including foreign language;