SYLLABUS

Name of the course (as specified in the approved curriculum) **Inorganic Chemistry**			Number of ECTS Credits **5**
Name of the course in Polish **Chemia nieorganiczna**			
Unit providing the course (Department/Institute) **Department of Chemistry**			
Course co-ordinator **prof. UPP dr hab. Zuzanna Magdziak**			
Field of study	Level **First degree studies**	Profile **General academic**	Semester **I**
Scope	Thesis specialisation		

TYPE OF CLASSES AND COURSE LOAD

(lectures and self-learning of the student)

Mode of studies: full-time		Mode of studies: part-time	
- lectures	15	- lectures	**-**
- practical classes	25	- practical classes	**-**
-		-	
-		-	
-	5	-	
- Self- learning	70		
Total number of hours:	**115**	Total number of hours:	**-**

OBJECTIVE OF THE COURSE

The aim of the course (lectures and laboratory exercises) is to familiarise students with the basics of chemistry necessary for further work in agriculture, biotechnology, and bioengineering.

The course aims to familiarise students with essential information related to acids, bases, salts, pH and buffers, and solution concentrations, which will then be used in work in a chemical laboratory.

TEACHING METHODS

Lecture with a multimedia presentation. Laboratory exercises - performing chemical experiments as well as qualitative and quantitative analyses with chemical calculations. Individual cooperation with the student.

	Course learning outcomes	The reference to field of study outcomes
Knowledge	O1 O2 O3 . . .	
Skills	O4 O5 . . .	
Social skills	O6 O7 . . .	
Methods of evaluation of learning outcomes		Symbols of course learning outcomes

TEACHING CONTENTS

Lecture topics
• Characteristics of basic inorganic compounds (acids, bases and salts).
• Basic concepts of the law and chemical concepts, equations of chemical reactions.
• Equilibria in aqueous solutions: electrolytic dissociation, hydrolysis.
• Types of chemical reactions: ion exchange, oxidation, and reduction reactions.
• Titration analysis - acid-base, redoximetry, complexometric.
• Definition of pH and principles of operation of buffer solutions.

Exercise topics
• Electrolytic dissociation. Detection of bases and acids. Neutralisation reactions. Salt hydrolysis. The action of acids, bases and salts on salts.
• Salt analysis (analytical reactions of the most important Cl^-, PO_4^{3-}, CO_3^{2-}, SO_4^{2-}, NO_3^- anions and cations Fe^{2+}, Fe^{3+}, Al^{3+}, Ca^{2+}, Mg^{2+}, NH^{4+}, K^+, Na^+ e.g. in soil solution).
• Introduction to quantitative analysis - accounting tasks.
• Alkacymetry. Volume analysis. Alkacimetric determination of NaOH.
• Redoximetry. Determination of iron content in iron (II) salt solution.
• Complex unions. Complexometric determination of water hardness.
• Selected methods for determining the acidity of a solution (pH).
• Principles of buffer operation.

The course completion methods and criteria	Percentage of a final grade
Colloquiums	40%
Written exam with the possibility of oral questioning	60%

LITERATURE REFERENCE

1. Inorganic Chemistry (4th Edition) 4th Edition by Gary L. Miessler, Donald A. Tarr
2. Concise Inorganic Chemistry by J. D. Lee
3.