

COURSE OUTLINE

1. GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
ACADEMIC UNIT	CROP SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CRS_101	SEMESTER	1 st
COURSE TITLE	General and Inorganic Chemistry		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
(the credits are awarded for the whole course)	3 (Lectures) + 1 (tutorial)	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General Background (General and Analytical Chemistry)		
PREREQUISITE COURSES:	There are no prerequisite courses.		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek. Teaching may be performed in English in case of foreign students		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

• *Guidelines for writing Learning Outcomes*

By the end of this course the student will be able to:

- understand the structure of atoms and molecules
- understand the position of elements in the Periodic Table and recognize basic physical and chemical properties of the elements based on their position in the Periodic Table
- understand the chemical formulas and the inorganic chemical compound nomenclature and terminology
- recognize the different categories of chemical reactions and express them correctly
- perform stoichiometric calculations and express the results correctly
- recognize chemical reagents and understand the way they are handled
- perform pH calculations
- know the basic analytical techniques of Chemistry (titrations, gravimetric analysis, instrumental analytical methods)

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Project planning and management

Adapting to new situations

Respect for difference and multiculturalism

Decision-making

Respect for the natural environment

Working independently

Showing social, professional and ethical responsibility and sensitivity to gender issues

Team work

Criticism and self-criticism

Working in an international environment

Production of free, creative and inductive thinking

Working in an interdisciplinary environment

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Production of new research ideas

Others...

.....

By the end of this course the student will, furthermore, have developed the following skills (abilities):

- Ability to solve stoichiometric problems
- Ability to understand the nature of the chemical bond
- Ability to interpret various physical and chemical properties of the compounds
- Ability to find information from any General and Analytical Chemistry book as well as from Internet sources

Generally by the end of this course the student will have developed the following general abilities (from the above list)

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Respect for the natural environment

Criticism and self-criticism

3. SYLLABUS

- Chemistry and Measurements
- Atoms, Molecules, Ions, Atomic and Molecular Structure, Periodic Table
- Oxidation number, Chemical bond, Chemical formulas and nomenclature of simple chemical compounds
- Solutions, Solubility, Standard Solutions
- pH, Buffers
- Chemical reactions, Chemical equations and stoichiometric calculations
- Acid-base reactions, redox reactions, complexation reactions, precipitation reactions
- Qualitative Analysis, Analysis of the most important groups of cations and anions
- Quantitative analysis, Classification of methods of classical and instrumental quantitative analysis, Gravimetric analysis, Titration, Chromatography, Electrochemical methods of analysis-Potentiometry, Optical methods of analysis - Ultraviolet-visible absorption spectrophotometry, Infrared spectrophotometry, Emission spectrophotometry, Atomic absorption

4. TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY</p> <p><i>Face-to-face, Distance learning, etc.</i></p>	Face to face.	
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> • Use of ICT (powerpoint) in teaching • Use of ICT (powerpoint) in laboratory exercises • Use of ICT in Student Communication (Learning Support through the e-class platform) 	
<p style="text-align: center;">TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<p>Activity Semester workload</p>	
	Lectures 39	
	Tutorials 13	
	Final examination 3	
	Private study time of the students for the lab preparation and final examination 70	
	<p>Course total (25 work load for each ECTS credit) 125</p>	
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of</i></p>	<p>Written final examination</p> <p><i>Minimum passing grade: 5 (Grade: 0-10)</i></p> <p>Greek language is used. For foreign students (e.g. Erasmus students) it can be done in English</p> <p>An oral examination may be held for special reasons, on the same day and time as the written examinations of the course will take place.</p>	

*evaluation, summative or
conclusive, multiple choice
questionnaires, short-answer
questions, open-ended questions,
problem solving, written work,
essay/report, oral examination,
public presentation, laboratory
work, clinical examination of
patient, art interpretation, other*

*Specifically-defined evaluation
criteria are given, and if and where
they are accessible to students.*

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. D.D. Ebbing and S. D. Gammon, "General Chemistry", 9th Edition, Houghton Mifflin Company, 2009.
2. R.H. Petrucci, W.S. Hawood, G.E Herring and J. Madura, "General Chemistry: Principles and Modern Applications", 9th Edition, Prentice Hall, 2006.
3. R. Chang, "General Chemistry: The Essential Concepts", McGraw-Hill Science Engineering, 2007.
4. T.E. Brown, E.H. LeMay and B.E. Bursten, "Chemistry: The Central Science", 10th Edition, Prentice Hall, 2006.
5. J. McMurry, R.C. Fay and L. McCarty, "Chemistry", 4th Edition, Prentice Hall, 2003.
6. S.S. Zumdahl, "Chemistry", 7th Edition, Houghton Mifflin College Div., 2007.

- Related academic sources and journals:

- Journal of Chemical Education (ACS Publications) <http://pubs.acs.org/journal/jceda8>