

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	AGRICULTURAL SCIENCES		
<b>ACADEMIC UNIT</b>	FOOD SCIENCE AND TECHNOLOGY		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	FST_102	<b>SEMESTER OF STUDIES</b>	FIRST
<b>COURSE TITLE</b>	GENERAL and INORGANIC CHEMISTRY		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	3		
Laboratory practice	2		
<b>TOTAL</b>	<b>5</b>	<b>5</b>	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	General background		
<b>PREREQUISITE COURSES:</b>	Typically, there are no prerequisite courses.		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>			

### 2. LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li><i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher</i></li> </ul>
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*Education Area*

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The scope of this course is the teaching of main chemical principles and laws. Moreover this course introduces the student to the most recent information on subjects as energy, new advances in materials and environmental issues. Students will understand the scientific bases for making the important personal choices demanded for the use of chemicals and chemical products and how chemistry research and development will affect the quality of human life.

By the end of this course every student is expected to have obtained i) main chemical principles within the framework of real-world applications ii) identification of chemical bond type iii) physicochemical properties and applications of main inorganic compounds iv) chemical equilibrium, chemical equilibrium of weak acid and bases, v) importance of buffer solutions, vi) neutralization and hydrolysis vii) concentration estimation viii) pH estimation of various solutions and mixtures ix) redox reactions and applications.

Furthermore students will obtain the necessary knowledge that will help them to understand the content of next courses as "Food Chemistry", "Food Technology", "Food Safety", "Organic Chemistry"

By the end of this course every student will be familiar with the use of reagents, solvents and basic laboratory techniques such as: solution preparation, mixture's components separation, qualitative analysis, quantitative analysis, titration and applications, pH measurement, solution's conductivity measurement.

### **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*

*.....*

*Production of new research ideas*

*Others...*

*.....*

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

Autonomous (Independent) work

Group work

Adapting to new situations

Promotion of free, creative and inductive thinking

Respect for the natural environment

Project planning and management

### 3. SYLLABUS

Living in a world of Chemistry. Introduction (atomic theory, periodic table). Nuclear reactions-nuclear energy, Chemical bonds. Liquids and solutions, Chemical equilibrium - ionic equilibria in aqueous solutions (acids and bases, hydrolysis, buffer solutions, precipitation, titration). Oxidation-reduction reactions, galvanic cells. Chemical thermodynamics. Chemical kinetics. Basic Laboratory techniques. Solutions preparation. Mixture's components separation. Qualitative Analysis. Quantitative Analysis. Titration. pH estimation. Solution's conductivity estimation.

### 4. TEACHING and LEARNING METHODS - EVALUATION

<p><b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i></p>	Lectures and laboratory work face to face.																					
<p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>Use of Information and Communication Technologies (ICTs) (e.g. power-point) in teaching. The lectures content of the course for each chapter are uploaded on the internet, in the form of pdf files, where from the students can freely download them using a password which is provided to them at the beginning of the studies.</p> <p>Use of ITCs (power-point) providing information on the theory and practice of the laboratory experiments</p>																					
<p><b>TEACHING METHODS</b> <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>	<table border="1"> <thead> <tr> <th data-bbox="592 1066 1106 1099"><i>Activity</i></th> <th data-bbox="1106 1066 1445 1099"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td data-bbox="592 1099 1106 1133">Lectures</td> <td data-bbox="1106 1099 1445 1133">39</td> </tr> <tr> <td data-bbox="592 1133 1106 1167">Laboratory work</td> <td data-bbox="1106 1133 1445 1167">20</td> </tr> <tr> <td data-bbox="592 1167 1106 1200">Laboratory reports</td> <td data-bbox="1106 1167 1445 1200">16</td> </tr> <tr> <td data-bbox="592 1200 1106 1234">Final examination</td> <td data-bbox="1106 1200 1445 1234">3</td> </tr> <tr> <td data-bbox="592 1234 1106 1267">Hours for private study of the student</td> <td data-bbox="1106 1234 1445 1267">47</td> </tr> <tr> <td data-bbox="592 1267 1106 1301"></td> <td data-bbox="1106 1267 1445 1301"></td> </tr> <tr> <td data-bbox="592 1301 1106 1335"></td> <td data-bbox="1106 1301 1445 1335"></td> </tr> <tr> <td data-bbox="592 1335 1106 1368"></td> <td data-bbox="1106 1335 1445 1368"></td> </tr> <tr> <td data-bbox="592 1368 1106 1447"><b>Total number of hours for the Course (25 hours of work-load per ECTS credit)</b></td> <td data-bbox="1106 1368 1445 1447"><b>125</b></td> </tr> </tbody> </table>		<i>Activity</i>	<i>Semester workload</i>	Lectures	39	Laboratory work	20	Laboratory reports	16	Final examination	3	Hours for private study of the student	47							<b>Total number of hours for the Course (25 hours of work-load per ECTS credit)</b>	<b>125</b>
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<p><b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of 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</i></p>	<ol style="list-style-type: none"> <li>1. Written examination after the end of the semester. The mark constitutes the 75% of the final grade (G<sub>75%</sub>). Minimum passing grade: 5.</li> <li>2. Reports following completion of each laboratory experiment. The mean mark constitutes the other 25% of the final grade (G<sub>25%</sub>). Minimum passing grade: 5.</li> </ol> <p>The final grade for the course is calculated by the final grade in the Lab (25%) and the grade of the final written examination (75%). The student must have secured a minimum grade of 5 in both Lab and the final written examination.</p>																					

*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. General Chemistry, Ebbing-Gammon, translation in Greek by N. Klouras, Travlos Publishing
2. General and Inorganic Chemistry, in Greek, M. Lalia-Kantouri, S. Papastefanou, ZHTH Publishing, Thes/niki
3. World of Chemistry, 2nd Edition, Joesten and Wood, Saunders College Publishing
4. Notes for Laboratory of General Chemistry, A. Ladavos, in Greek

*- Related academic journals:*