Chemistry and Informatics

1. GENERAL

SCHOOL	NATURAL SCIENCES		
ACADEMIC UNIT	CHEMISTRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**XA131**	**SEMESTER**	**1st**
COURSE TITLE	CHEMISTRY AND INFORMATICS		

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	2	5
Seminars	-	
Laboratory work	2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background and Skills development.
PREREQUISITE COURSES:	Typically, there are not prerequisite courses.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek. Teaching may be however performed in English in case foreign students attend the course.
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*

Basic skills in Computational Mathematics, Basic methodology of solving scientific problems.

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	*Others*
Production of new research ideas	

Use of computer, use of Internet

3. SYLLABUS

A. Computer architecture. Using computers, basic knowledge of the Internet. Seeking and exploring scientific information on the Internet. Data bases. Computer programming with emphasis on problems of significance to Chemistry and Physics.

B. Series. Matrix calculus. Roots of equations. Numerical integration. Langrange interpolation. Solving ordinary differential equations. Length of continuous curves. Fractals.

C. Text processing. Basic software: WinWord, Excel/Office. Introducing ORIGIN. Curve plotting and fitting. Collecting scientific information. Writing a scientific project.

D. Chemical information. Project on a subject of chemical interest (compulsory).

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY
Face-to-face, Distance learning, etc.

Lectures and laboratory work face to face.

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students

Use of Information and Communication Technologies (ICTs) (e.g. PowerPoint) in teaching. The major part of the lectures content of the course for each chapter are uploaded on the internet, in the form of a series of ppt files, where from the students can freely download.

Laboratory for Computer Programming with emphasis on problems related to the application of Mathematics to Physics and Chemistry. Draw information and scientific data from the Internet.

TEACHING METHODS
The manner and methods of teaching are described in detail.

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.

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

Activity	*Semester workload*
Lectures (2 contact hours per week x 13 weeks)	26
Laboratory Exercises (2 contact hours per week). Weekly training on the content of the course through applications using PC.	26
Project preparation	40
Final examination (1 contact hour)	1
Hours of Private Study of the Student for the preparation of the Final Examination	32
Course total	***125***

STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

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 examination of patient, art interpretation, other

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

Final written examination (90% of the final grade).

Evaluation of the project (10% of the final grade).

Greek grading scale: 1 to 10. Minimum passing grade: 5.

5. ATTACHED BIBLIOGRAPHY

1. H.G. Hecht, "*Mathematics in Chemistry*", Prentice Hall, 1990.
2. E.Steiner, "*The Chemistry Maths Books*", Oxford, 1996.