COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED BIOLOGY and BIOTECHNOLOGY		
DEPARTMENT	BIOTECHNOLOGY		
STUDY LEVEL	*Undergraduate*		
COURSE CODE	**3360**	**SEMESTER**	4th
COURSE TITLE	PHYSICAL CHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	3	1,56
Laboratory work	2	1,04
Literature review		1,00
Laboratory assays writing		0,40
Private studying		1,00
TOTAL		**5,00**

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background
PREREQUISITES	
LANGUAGE	Greek
IS THE COURSE OFFERED for ERASMUS STUDENTS?	No
COURSE WEB PAGE	https://mediasrv.aua.gr/eclass/courses/ETDA141/

2. LEARNING OUTCOMES

Learning Outcomes

This course is a basic introductory course to the field of Physical Chemistry.
Its contents aim to the introduction of students to the basic terms of gas state, thermodynamics, solutions, phases, chemical kinetics and photochemistry.
The major goal is to introduce the students to the basic concepts of Physical Chemistry that govern the phenomena and the techniques used for the study and treatment of foods
When completing this course, students should be able to understand the difference between ideal and real gases, know the basic thermodynamic parameters and their application, formation of solutions, concentration of solutions, distillation, colligative properties, understand a phase diagram, understand terms of chemical kinetics and understand the interactions of light and matter.

General Competenses

- Retrieve, analyze and synthesize data and information, with the use of necessary technologies
- Future research
- Make decisions
- Work autonomously
- Work in teams
- Be critical and self-critical

3. COURSE CONTENT

1. Gases (Gas laws. Ideal and not ideal behaviour of gasses)
2. Thermodynamics (Zero and First Laws of Thermodynamic,cp, cv)
3. Thermodynamics (Second and Third Laws of thermodynamics, enthalpy, entropy)
4. Thermodynamics (Free energy, chemical potential)

5.	Solutions (Terms, concentration, Types)
6.	Solutions (Liquid solutions, distillation)
7.	Colligative properties
8.	Phase equilibrium
9.	Partition law of Nernst
10.	Chemical kinetics (velocity, order)
11.	Chemical kinetics (kinetical equations)
12.	Chemical kinetics (kinetic theories, Catalysis)
13.	Photochemistry

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD *Face-to-face, Distance learning, etc*	Direct learning and lab experiments
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES *Use of ICT in teaching, laboratory education, communication with students*	Power point presentations
TEACHING ORGANISATION *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 Work Load*** Lectures — 39 h Laboratory work — 26 h Literature review — 25 h Laboratory assays writing — 10 h Private studying — 25 h ***Total contact hours and training (25 hours of student work load per ECTS)*** — **125 h**
STUDENTS 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.*	FOR THE THEORETICAL PART I. Written Examination that includes right or wrong questions, questions that require brief answers etc FOR THE LABORATORY I. Written examination (80%) II. Written reports for laboratory exercises (20%)

5. BIBILIOGRAPHY

-Proposed Literature:
Lecture Notes for physical chemistry, V. Evageliou (AUA)
Laboratory Notes for food physical chemistry, V. Evageliou (AUA)

The students also select one of the following books:
1. Abbreviated Physical chemistry, Giannakoudakis & Giannakoudakis, Zitis pubications
2. Physical chemistry, Katsanos N., Papazisis publications