**MODULE LAYOUT**

1. **GENERAL**

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| **SCHOOL** | FOOD AND NUTRITIONAL SCIENCES | | | | |
| **DEPARTMENT** | FOOD SCIENCE AND HUMAN NUTRITION | | | | |
| **STUDY LEVEL** | *Undergraduate* | | | | |
| **MODULE CODE** | **3360** | **SEMESTER** | | 2nd | |
| **MODULE TITLE** | PHYSICAL CHEMISTRY | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** | | | **WEEKLY TEACHING HOURS** | | **ECTS** |
| Lectures & laboratory | | | 5 | | 4.5 |
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| **COURSE TYPE** | Scientific area, background knowledge | | | | |
| **PREREQUISITES** |  | | | | |
| **LANGUAGE** | Greek | | | | |
| **IS THE COURSE OFFERED forERASMUS STUDENTS?** | No | | | | |
| **COURSE WEB PAGE** | https://mediasrv.aua.gr/eclass/courses/ETDA141/ | | | | |

1. **LEARNING OUTCOMES**

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| **Learning Outcomes** | |
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| 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 | |

1. **MODULE CONTENT**

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| * + 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 |

1. **TEACHING and LEARNING METHODS - Evaluation**

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| **TEACHING METHOD** | Direct learning and lab experiments |
| **USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES** | Power point presentations  Communication via the e-class platform |
| **TEACHING ORGANISATION** | |  |  | | --- | --- | | ***Activity*** | ***Work load for the semester (h)*** | | Lectures | 39 | | Laboratory work | 26 | | Private studying | 15 | | laboratory assays writing | 32.5 | |  |  | |  |  | | ***Total contact hours and training*** | ***112.5*** | |
| **STUDENTS EVALUATION** | 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%) |

1. **BIBILIOGRAPHY**

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| ***-Proposed Literature:***   1. Lecture Notes for physical chemistry, V. Evageliou (AUA) 2. Laboratory Notes for food physical chemistry, V. Evageliou (AUA)   The students also select one of the following books   * + - 1. 1. Abbreviated Physical chemistry, Giannakoudakiw et al., Zitis pubications       2. Physical chemistry, Karaiskakis G, Travlos publications |