



Course Syllabus

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| Course Code | Course Title | ECTS Credits |
| IMPH-110 | Physics for Pharmaceutical Sciences/ Φυσική για τις Φαρμακευτικές Επιστήμες | 3 |
| Prerequisites | Department | Semester |
| None | Health Sciences | Fall/Spring |
| Type of Course | Field | Language of Instruction |
| Compulsory | Pharmacy | English/Greek |
| Level of Course | Lecturer(s) | Year of Study |
| 1 st Cycle | Dr Savva Kyriaki | 1 st |
| Mode of Delivery | Work Placement | Corequisites |
| Face-to-face | N/A | N/A |

Course Objectives:

The main objectives of the course are to:

- Introduce students to the physical laws governing phenomena that are related to the science of Pharmacy and more specifically to Physical Pharmacy and Instrumental Analysis
- Help students develop an understanding of the principles taught as well as analytical problem-solving ability

Learning Outcomes:

After completion of the course students are expected to be able to:

- Understand the concepts used to describe motion, the concepts of force, work and energy, as well as the relationships between them
- Apply the laws and principles of Hydrostatics
- Apply Bernoulli's principle and explain Poiseuille's law
- Demonstrate an ability to calculate the buoyant force acting on an object, and when it is floating in a known fluid, calculate the fraction of the object that is submerged
- Comprehend the nature of surface tension and capillarity, and explain relative phenomena
- Understand the concepts of phase, frequency, wavelength, and wave velocity, as well as the transmission of energy and power by wave motion

- Understand the production and transmission of sound waves and how the frequency and amplitude of a sound wave can influence the human hearing
- Analyze and apply the laws governing the heat transfer mechanisms and phase transitions
- Demonstrate an ability to calculate the size of an electric force, and understand the type of electric fields that exist around charge configurations, the electrical potential and the electrical capacitance
- Display knowledge in light refraction and dispersion phenomena
- Explain and calculate the emission and absorption spectra based on Bohr's model
- Describe the modes of radioactive decay, and calculate the activity of radioactive samples using appropriate equations

Course Content:

- Review of basic concepts of force and motion, work and energy
- Hydrostatic and atmospheric pressure, pressure of the human body
- Fluid dynamics
- Surface tension and capillarity
- Oscillation and waves, sound and hearing
- Ideal gases, gas laws, kinetic theory of gases
- Phase and temperature changes
- Heat as a form of energy, Calorimetry, Heat transfer phenomena
- Electricity (static electricity, electric force and field, electric potential and energy, capacitance)
- Optics (nature of light, geometric optics, eye and vision)
- Atomic physics (Bohr's atomic model, atomic absorption and emission spectra)
- Nuclear physics
- Radioactive decay

Learning Activities and Teaching Methods:

Lectures, tutorials, practice problems solved in class and discussion

Assessment Methods:

Final exam, Midterm exam

Required Textbooks / Readings:

| Title | Author(s) | Publisher | Year | ISBN |
|---|---|--------------------------|-------------|-------------------|
| Introduction to Biological Physics for the Health and Life Sciences | Kirsten Franklin, Paul Muir, Terry Scott, Lara Wilcocks, Paul Yates | Wiley | 2010 | 978-0-470-66593-0 |
| Η Φυσική στη Βιολογία και την Ιατρική, 3η έκδοση | Paul Davidovits | Παρισιάνος | 2013 | 978-960-394-830-8 |
| Physics: The First Science | Peter Lindefeld, and Suzanne White Brahmia | Rutgers University Press | 2011 | 978-0813549378 |
| Φυσική για Επιστήμονες και Μηχανικούς - Μηχανική, Ταλαντώσεις και μηχανικά κύματα, Θερμοδυναμική, Σχετικότητα | Raymond A. Serway, John W. Jewett | Κλειδάριθμος | 2013 | 978-9604615087 |
| Φυσική για Επιστήμονες και Μηχανικούς - Ηλεκτρισμός και μαγνητισμός, Φως και οπτική, Σύγχρονη φυσική | Raymond A. Serway, John W. Jewett | Κλειδάριθμος | 2013 | 978-9604615094 |