



Course Code PHAR-107	Course Title Calculus/Μαθηματικά/Υπολογισμοί στη Φαρμακευτική	Credits (ECTS) 3
Department Life & Health Sciences	Semester Fall	Prerequisites None
Type of Course Required	Field Pharmacy	Language of Instruction Greek/English
Level of Course 1 st Cycle	Year of Study 1 st year	Lecturer Charis Kalyvas
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Course Objectives:

- Understanding the concepts of pharmaceutical measurements, the function of pharmaceutical balances, and the tremendous responsibility of the pharmaceutical scientist to perform pharmaceutical measurements with the highest accuracy possible.
- Realizing the importance of precise measurements in pharmaceutical dosage to the quality of life and survival of a patient.
- Measurement and applications of specific gravity and concentrations of solids and liquids in calculating relative quantities in solid, semisolid or liquid components of pharmaceutical prescriptions
- Understanding and applying dilutions as a concept in formulation and pharmaceutical analysis.
- Application of alligation methods.
- Performing calculations related to the preparation of isotonic solutions
- Performing calculations related to preparation of common pharmaceutical types such as powders, suspensions, capsules etc.
- Performing calculations related to rate and frequency of intravenous administration of sterile solutions.

Learning Outcomes:

With the completion of the course, students will be able to easily perceive and perform calculations related in several aspects of pharmaceuticals, such as pharmaceutical technology, clinical and preparation in pharmacy, pharmacology, pharmaceutical chemistry and pharmacokinetics.

Course contents:

1. Weighting and other measurements
2. Calculation of errors in pharmaceutical mixtures

3. Density and specific gravity
4. Pharmaceutical concentration units
5. Dilution and concentration of pharmaceutical solutions and other physical mixtures
6. Alligation methods in pharmaceutical sciences
7. Isotonic solutions
8. Biological fluids and electrolytes
9. Fundamental concepts of dosage calculations
10. Dosage calculations based on body surface area (BSA)

Teaching Methods:

Lectures and exercises.

Assessment Methods:

Final Exam	60%
Two midterm exams	40%

Required textbooks:

Authors	Title	Publisher	Year	ISBN
1. M. Savva	Rational Approach to Pharmaceutical Calculations	Vagma LLC	2006	ISBN 0-9786412-1-3

Recommended Books:

Authors	Title	Publisher	Year	ISBN
1. H.C. Ansel	Pharmaceutical Calculations	Lippincott Williams & Wilkin	2013, 14 th ed	ISBN: 978-1451120363
2. I.H. Segel	Biochemical Calculations	John Wiley and Sons	1976, 2 nd Ed	ISBN: 978-
3. S. Parsons	Pharmaceutical Calculations	Parsons Printing Co	2013	ISBN: 978-0578063737

(Also available as open source e-book: <http://pharmaceuticalcalculations.org>)