



## Course Syllabus

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|--|-----------------------------------|--------------------------------|
| <b>Course Code</b>                     | <b>Course Title</b>               | <b>ECTS Credits</b>            |
| IMPH-445                               | Pharmacokinetics/ Φαρμακοκινητική | 5                              |
| <b>Prerequisites</b>                   | <b>Department</b>                 | <b>Semester</b>                |
| IMPH-300, IMPH-215, IMPH-365, IMPH-366 | Health Sciences                   | Fall/Spring                    |
| <b>Type of Course</b>                  | <b>Field</b>                      | <b>Language of Instruction</b> |
| Compulsory                             | Pharmacy                          | English/Greek                  |
| <b>Level of Course</b>                 | <b>Lecturer(s)</b>                | <b>Year of Study</b>           |
| 1 <sup>st</sup> Cycle                  | Dr Maria Prapopoulou              | 4 <sup>th</sup>                |
| <b>Mode of Delivery</b>                | <b>Work Placement</b>             | <b>Corequisites</b>            |
| Face-to-Face                           | N/A                               | N/A                            |

### Course Objectives:

The main objectives of the course are to:

- i) to assist pharmacy students in developing their skills to understand and assess clinically relevant drug interactions in such a way as to finally contribute for minimizing adverse drug interactions (ADRs) in healthcare.
- ii) Strengthen their predictive as well as the assessment capabilities for drug interactions and ADRs so that both pharmaceutical care environment and drug delivery outcomes will be achieved.
- iii) acquire knowledge and practical skills as practitioners to improve drug efficacy and safety profiles in clinical practice.

### Learning Outcomes:

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

1. Understand the basic concepts of pharmacokinetics
2. Understand in depth the basic pharmacokinetic concepts, processes (absorption, distribution, metabolism, excretion) and basic pharmacokinetic relationships.
3. Describe the different pharmacokinetic models
4. Determine the basic pharmacokinetic parameters that describe drug absorption and disposition

5. Compare and differentiate between compartmental and non-compartmental analysis
6. Evaluate the in vitro-in vivo correlation for different drug products
7. Define various terms related to bioavailability and bioequivalence
8. Identify the different study designs applied in bioequivalence studies
9. Understand the statistical tests applied in bioequivalence studies
10. Compare the bioequivalence of two drug products
11. Recognize the age, weight, sex and genetic related factors that can cause pharmacokinetic variability
12. Recognize the disease related factors that can cause pharmacokinetic variability
13. Identify drug-drug and drug-food interactions that can cause pharmacokinetic variability
14. Acquire skills, by solving representative pharmacokinetic exercises, and to apply pharmacokinetic principles to clinical practice by solving specific therapeutic problem
15. Develop competencies by applying scientifically documented clinical practice that will avoid drug interactions with other co-administered drugs, phytotherapeutics and foods and will significantly reduce the incidence of adverse reactions (AD).
16. Enhance their ability to analyze and predict drug interactions and minimize the occurrence of ADRs during drug administration.

**Course Content:**

1. Introduction to the basic concepts of pharmacokinetics.
2. Absorption of drugs.
3. Distribution of drugs.
4. Binding of drugs to plasma proteins and tissues.
5. Clearance of drugs.
6. Rapid intravenous drug pharmacokinetics.
7. Pharmacokinetics of intravenous drug infusion.
8. Extravascular drug pharmacokinetics.
9. Chronic drug dosage regimens.
10. Dosage regimens for kidney disease.
11. Pharmacokinetic drug interactions.
12. Intestinal drug metabolism,
13. Hepatic drug metabolism,
14. Analysis of drug interaction mechanisms,
15. Drug-drug interactions,
16. Adverse drug reactions,
17. Drug-phytotherapeutic interactions,
18. Drug-Food Interactions,

19. Bioequivalence  
20. Dosage considerations for medicinal products

**Learning Activities and Teaching Methods:**

Lectures, class discussion, assignments

**Assessment Methods:**

Exercises, Final exam, Midterm exam

**Required Textbooks / Readings:**

| Title                                       | Author(s)                                     | Publisher                 | Year | ISBN           |
|---|---|---------------------------|------|----------------|
| Applied Biopharmaceutics & Pharmacokinetics | Leon Shargel, Susanna Wu-Pong, Andrew B.C. Yu | The McGraw-Hill Companies | 2015 | 978-0071830935 |