האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

# The Hebrew University of Jerusalem

## Syllabus

# Pharmacokinetics - 64665

Last update 26-09-2024

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: School of Pharmacy

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Ein Karem

Course/Module Coordinator: Dr Tawfeeq Shekh-Ahmad

Coordinator Email: tawfeeq.shekh-ahmad@mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

*Prof. Tawfeeq Shekh-Ahmad*

*Course/Module description:*

*This course provides the students with knowledge and basic intuitive understanding of the principles of biopharmaceutics and pharmacokinetics and how these principles can be applied to achieve successful drug therapy.*

*Course/Module aims:*

*This course is designed to impart knowledge of the principles of biopharmaceutics and pharmacokinetics that will enable students to become adept at solving pharmacokinetic problems arising in drug therapy and to understand the applications and utility of equations in clinical practice.*

*Learning outcomes - On successful completion of this module, students should be able to:*

*• Define and understand basic terms and concepts in biopharmaceutics, pharmacokinetics and pharmacodynamic.*
*• Derive important pharmacokinetic parameters that best describe the processes of drug absorption, distribution, metabolism and elimination*
*• Design and evaluate a dosage regimen of the drugs using biopharmaceutic, pharmacokinetic and pharmacodynamic parameters.*

*Attendance requirements(%):*

*80*

*Teaching arrangement and method of instruction:*

*Course/Module Content:*

*1. Introduction: Basic Concepts and Terminology (2 Hours)*
*2. Absorption, Distribution, and Elimination of drugs (4 Hours)*
*3. The One-compartment Pharmacokinetics Model*
*3.1. Intravenous bolus administration (4 Hours)*
*3.2. First order absorption and elimination*
*Extravascular routes of drug administration (4 Hours)*
*3.3. Zero order infusion or absorption and first order elimination*
*Continuous intravenous infusion (3 Hours)*
*4. Multiple-dose regimens*
*4.1. Intravenous bolus administration (3 Hours)*
*4.2. Extravascular routes of drug administration (4 Hours)*
*5. Two-Compartment Pharmacokinetics Model (3 Hours)*

*6. Bioavailability and bioequivalence (3 Hours)*
*7. Clearance concepts*
*7.1. Renal clearance (3 Hours)*
*7.2. Metabolic clearance (3 Hours)*
*8. Metabolites pharmacokinetics (4 Hours)*

*Required Reading:*
*Clinical Pharmacokinetics and Pharmacodynamics, concepts and applications. Malcolm Rowland and Thomas N. Tozer, 4th Edition (2011)*

*Additional Reading Material:*
*1. Clinical Pharmacokinetics and Pharmacodynamics, Malcolm Rowland and Thomas N. Tozer, 3th Edition (1995)*
*2. Applied Biopharmaceutics and Pharmacokinetics, Leon Shargel and Andrew B.C. Y, 7th Edition (2012).*

*Grading Scheme:*
*Written / Oral / Practical Exam 100 %*

*Additional information:*