



## Module Description

University of AL-Kafeel / College..... Academic Year (2020-2021)

<b>Stage:</b>	Fourth stage
<b>Specialization:</b>	Pharmacy
<b>Name of the Course in Arabic</b>	صيدلة حيائية
<b>Name of the Course in English</b>	Biopharmaceutics
<b>Goals:</b>	<p>After completing this course, the student should be able to:</p> <ul style="list-style-type: none"> <li>▪ Describe of how the physicochemical properties of drugs, routes of administration, and dosage forms affect the rate and extent of drug absorption, including the influences of particle size, surface area, ionization, salt form, partition coefficient, excipients, solubility and possible rate-limiting steps in drug absorption.</li> <li>▪ Describe mechanisms of drug absorption into the systemic circulation, as well as the influences of a drug's physicochemical properties and physiological factors.</li> <li>▪ Define and describe bioavailability and bioequivalence.</li> <li>▪ Describe and define linear and nonlinear pharmacokinetics of drug, including drug absorption, distribution and volume of distribution, half-life, renal excretion and hepatic clearance</li> </ul>
<b>Description</b>	<p>The coarse deals with the physical and chemical properties of drug substance, dosage form and the biological effectiveness of the drug or drug product upon administration, including drug availability in the human or animal body from a given dosage form. The pharmacokinetic part of the coarse deals with the time-coarse of the drug in the biological system, and quantification of drug concentration pattern in normal subjects and in certain disease states</p>

<b>Number of Theoretical lectures</b>	Theory 3
<b>Number of Practical lectures</b>	2
<b>Credits</b>	3
<b>Name of Instructor in Arabic</b>	أ.د. حيدر كاظم عباس (نظري), أ.د. حيدر كاظم عباس (عملي)
<b>Name of Instructor in English</b>	Prof. Dr. Hayder Kadhim Abbas
<b>Title</b>	أستاذ
<b>Academic email:</b>	<a href="mailto:hayder.ismael@alkafeel.edu.iq">hayder.ismael@alkafeel.edu.iq</a>
<b>Phone number (WhatsApp)</b>	07801548803

### Curriculum / Theoretical:

Week	Syllabus
1	Introduction to biopharmaceutics.
2	Biopharmaceutic aspects of products; drug absorption; mechanisms of absorption; physicochemical factors; dissolution rate; effects of excipients; type of dosage forms.
3	One compartment open model.
4	Multicompartment models.
5	Pharmacokinetics of drug absorption.
6	Bioavailability and bioequivalence.
7	Clearance of drugs from the biological systems.
8	Hepatic elimination of drugs.
9	Protein binding of drugs.
10	Intravenous infusion
11	Multiple dosage regimens.
12	Non-linear pharmacokinetics.
13	Dosage adjustment in renal diseases.

<b>Week</b>	<b>Syllabus</b>
<b>1</b>	Preparation of calibration curve of salicylic acid.
<b>2</b>	<i>In vitro</i> evaluation of bulk laxative.
<b>3</b>	<i>In vitro</i> evaluation of antacids.
<b>4</b>	Dissolution of tablets.
<b>5</b>	Review and tutorial
<b>6</b>	Determination of pharmacokinetic parameters from CP-time by residual method.
<b>7</b>	Determination of pharmacokinetic parameters from CP-time by trapezoidal method.
<b>8</b>	Determination of pharmacokinetic parameters from urine excretion samples.
<b>9</b>	Hydrolysis of aspirin in buffer pH 6.8.
<b>10</b>	Review and tutorial

### **Curriculum / Practical:**

### **References :**

#### **Main References :**

- [1] *Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics; Latest edition.*
- [2] **Aulton's Pharmaceutics The Design and Manufacture of Medicines** By Michael E. Aulton and Kevin M. G. Taylor
- [3] *Lab Manual for Practical Biopharmaceutics Adopted by the Department*

#### **Secondary References:**

- [1] *Pharmaceutical Dosage forms and Drug Delivery Systems* By Haward A. Ansel; latest edition
- [2] *Physical Pharmacy* by Alfred Martin et al; (Latest edition).