

<b>POLI</b> ESCOLA SUPERIOR SAÚDE <b>TÉCNICO</b> <b>GUARDA</b>	<b>SUBJECT DESCRIPTION</b>	<b>MODELO</b> PED.015.03
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*Mário Roly*

Course	Pharmacy					
Subject	Pharmacology I					
Academic year	2023/2024	Curricular year	2nd	Study period	1st semester	
Type of subject	Compulsory	Student workload (H)	Total: 135	Contact: 75	ECTS	5
Professor(s)	Mário José de Abreu Marques Rodrigues					
<input type="checkbox"/> Area/Group Coordinator <input checked="" type="checkbox"/> Head of Department		Mário José de Abreu Marques Rodrigues				

## PLANNED SUBJECT DESCRIPTION

### 1. LEARNING OBJECTIVES

- O1. To understand the pharmacological bases and develop a critical thought in pharmacological issues;*
- O2. To identify studies necessary to develop new drugs, realizing the scientific methods that support pharmacology and distinguish it from empiricism;*
- O3. To understand general mechanisms of action of drugs, as well as their general cycle in the body;*
- O4. To know the factors that influence individual variability of response to drugs;*
- O5. To understand the mechanisms by which drug-drug, drug-food and drug-herbals interactions may occur;*
- O6. To know the main mechanisms of pharmacological intervention in different systems.*
- O7. To Develop the motivation on research of new therapeutic solutions.*

### 2. PROGRAMME

- C1. General principles of pharmacology;*
- C2. Development of new drugs: toxicological studies, clinical trials;*
- C3. Generic drugs: bioavailability/bioequivalence studies;*
- C4. Dosage forms and routes of administration;*
- C5. Biopharmaceutical phase of the overall cycle of drugs in the body;*
- C6. Pharmacokinetics: absorption, distribution, metabolism and excretion;*
- C7. Pharmacokinetic parameters and pharmacokinetic models;*
- C8. Pharmacodynamics: actions mediated and non-mediated by molecular receptors;*
- C9. Variability of response to drugs;*
- C10. Pharmacology in special groups: pediatric, pregnancy, breastfeeding, elderly, renal and hepatic impairment;*
- C11. Mechanisms of drug interactions;*
- C12. Adverse drug reactions, pharmacovigilance and safety alerts;*

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*C13. Pharmacology of organic systems. Anatomical Therapeutic Chemical (ATC) classification system and Pharmacotherapeutic drugs Classification;*

*C14. Pharmacological intervention mechanisms in diseases and main therapeutic targets.*

### 3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

*The study of the principles of pharmacology (C1) allow the development of students' critical thinking in the area of pharmacology (O1). The study of the development of new drugs and generic drugs (C2 and C3), allow the understanding of the research and development process of new drugs (O4). The study of administration routes and the general cycle of drugs in the body (C4 to C8), as well as the study of pharmacology in special populations (C9) allow one to understand the mechanisms of action of drugs and the factors of variability in response to them (O5 to O6). The study of the mechanisms of drug interactions and pharmacovigilance (C10 to C11) enables you to develop the ability to analyze results and report ADRs (O4 and O5). The study of the pharmacology of the major systems and therapeutic targets (C12 and C13) allows to understand the pharmacological interventions (O6) and to develop the ability to research new therapeutic solutions and scientific culture (O7).*

### 4. MAIN BIBLIOGRAPHY

*Rang, H.P. Dale, M.M., Ritter J.M., Moore, P.K. (2006); Rang and Dale's Pharmacology, 6ª ed, Elsevier. Osswald W., Guimarães, S. (2006). Terapêutica Medicamentosa e suas Bases Farmacológicas, 5ª ed, Porto Editora.*

*Laurence B, Goodman and Gilman's (2005). The Pharmaceutical Basis of Therapeutics, 15ª ed, McgrawHill Companies IN TL Division.*

*Koda-Kimble and Young's (2012). Applied Therapeutics: The Clinical Use of Drugs, Tenth Edition, Wolters Kluwer Health.*

*<https://www.infarmed.pt/web/infarmed>.*

*<http://www.ema.europa.eu/ema/>.*

*<http://www.fda.gov/>.*

### 5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

*The teaching methodologies are adapted to the different types of teaching foreseen for the CU, namely: (i) theoretical teaching, with masterly presentation of the contents and their systematization in an integrated way, stimulating students for interaction and discussion of the topics covered. (ii) theoretical and practical teaching, with resolution of practical exercises and analysis of scientific papers and official documents from INFARMED, EMA and FDA, related to the content presented in lectures, with emphasis*

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*Alina Rodriguez*

on interactive discussion with students and critical spirit in the interpretation and analysis of information. The assessment includes two frequencies (75%), continuous assessment (10%) and presentation in the form of oral communication about a work on the pharmacokinetics and pharmacodynamics of a biological medicine or biopharmaceutical or recent drugs (15%). The approval of the curricular unit was obtained with the final assessment of 9.5 values (10 values), in a scale of zero to twenty values (0-20). Students having less than 9.5 in the final assessment or have less than 7.5 values in the final evaluation of some of the evaluation components and their compliance with the frequency scheme for theoretical-practical classes are admitted to the exam. The grade of the evaluation of the work presented will be left for the exam, keeping the ponderation of 15% of the final grade.

Students covered by special statutes who do not attend a sufficient number of classes to allow continuous assessment of their performance in the classroom will be evaluated only by written tests and work, with a weighting of 85% and 15% respectively.

The improvement of the classification implies an exam, at the examination period provided for this purpose, of all theoretical and theoretical-practical program content.

## 6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The theoretical classes consist of the masterly exposition of the course contents, systematizing the most relevant and current aspects, using audiovisual media. These classes allow the achievement of objectives related to cognitive ability and knowledge (O2, O4, O6). In theoretical-practical classes interactive discussion with students, exercise solving and analysis of articles, reports and other official documents from international entities are privileged, which allows the achievement of objectives related to research skills, analysis and synthesis of information and argumentative capacity (O1, O3, O5, O7). As active learning activities, questions are posed to integrate the content presented, creating a space for debate and resolution of doubts. The recommended bibliography is complemented by suggestions for reading scientific articles adapted to each theme and program content. This approach allows the development of a scientific culture, developing research and investigation skills (O7).

## 7. ATTENDANCE

Attendance to 75% of theoretical-practical classes is mandatory. Students who do not comply with this frequency regime and who are not covered by a special statute fail and are not admitted to the final exam.

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#### 8. CONTACTS AND OFFICE HOURS

Márcio Rodrigues | marciorodrigues@ipg.pt | Office 4

Office hours – Tuesday: 10.30h-12.30h | Wednesday: 10.30h-12.30h

#### DATE

29 September 2023

#### SIGNATURES

Professor and Head of Department

  
 (Márcio José de Abreu Marques Rodrigues)