



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Farmacologia

1920-3-E1301Q069

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#### Aims

The aim of the course is to teach students an approach to the study of pharmacologic agents through the analysis of the drug actions on living systems. The course explores drug actions at levels ranging from the single molecule to the whole organism. Further aim is to detail the distribution of drugs in human body (pharmacokinetic) as well as the relationship efficacy-toxicity. Through the recent scientific literature, students examine both the actions of current drugs and the development of new drugs. In particular: a) Knowledge and understanding: at the end of the course the student will have acquired the knowledge about the mechanism of action of drugs and the ability to properly understand the relationship between the molecular mechanism and therapeutic effect; b) Applying knowledge and understanding: the student will be able to propose alternatives to the current pharmacological strategies; c) Making judgements: the student will be able to propose alternatives to the current pharmacological strategies on the basis of the knowledges acquired during the course; d) Communication skills: at the end of the course the student will have acquired adequate pharmacological language through which he'll be able to describe the pharmacology; e) Learning skills: the student will have expertise useful to be applied in other pharmacological studies or in research project.

#### Contents

Topics covered include: mechanisms of drug action, dose-response relations, pharmacokinetics, drug delivery systems, drug metabolism, toxicity of pharmacological agents, drug interaction and substance abuse. Selected agents and classes of drugs are examined in detail.

#### Detailed program

1) General pharmacology:  
research and development of new drugs

pharmacokinetics (absorption, distribution, metabolism and elimination of drugs)

bioequivalent drugs

receptor theories and the study of drug-receptor interaction

dose-effect curves and therapeutic index

drug tolerance

2)Molecular pharmacology:

mechanism of action of different classes of drugs starting from their main targets: enzymes (NSAIDs, anti-Parkinson's, anti-Alzheimer's), transport systems (antidepressants, antiulcerer drugs), DNA (antineoplastic drugs), receptors (benzodiazepines, cortisones, insulin) , i.e.

## **Prerequisites**

The student should have basic knowledge in biochemistry, physiology, anatomy

## **Teaching form**

Frontal lessons including the analysis and discussion of literature

## **Textbook and teaching resource**

Slides showed at lesson, reviews e research articles are available on e-learning platform.

For consultation: Farmacologia generale e molecolare di Francesco Clementi e Guido Fumagalli, Ed. Edra, 2016.

## **Semester**

Second semester

## **Assessment method**

Oral examination. The questions aim to assess the acquisition of the basic knowledge and to evaluate the concepts comprehension, the ability to connect the different issues and the ability to discuss about a pharmacological problem. One questio regarding general pharmacology and one question about molecular pharmacology.

## **Office hours**

On appointment. Request via e-mail to [barbara.costa@unimib.it](mailto:barbara.costa@unimib.it)

