UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Pharmacology

2425-2-I0303D034

Aims

The course aims to provide students with the basic principles of general pharmacology and the mechanism of action of some of the main drugs, as well as basic elements of anesthesia and resuscitation.
Students will also have to learn the regulatory and pharmacological bases of medicinal products for diagnostic use, describe the different classes of diagnostic medicinal products used in Radiology and Nuclear Medicine, the pharmacokinetic properties, the mechanism of action and the safety of medicinal products for diagnostic use with particular reference to CT contrast agents.
For a detailed description see the individual modules

Contents

The course includes the discussion of the fundamental concepts of the principles of pharmacokinetics (fate of drugs in the body) and pharmacodynamics (molecular targets of drugs); outline of drug-receptor interaction and variability of pharmacological response; classification of adverse drug reactions.
It also aims to provide students with the main knowledge regarding medicines for diagnostic use and to provide students with the basic principles of anesthesiology and first aid techniques.

Detailed program

? General pharmacology; clinical and preclinical drug development including pharmacovigilance, pharmacokinetics: Absorption, Distribution, Metabolism and Excretion (ADME). Metabolism: biotransformation processes will be explored in depth, with particular attention to phase I and phase II reactions and the role of liver enzymes, especially cytochromes P450. Finally, the part on excretion will cover the main mechanisms of renal elimination and the phenomenon of enterohepatic circulation, with brief mentions of secondary excretion routes.

Radiopharmacology: the physical, pharmacokinetic and pharmacodynamic characteristics of radiopharmaceuticals for diagnostic and therapeutic use will be presented.
? Introduction to medicines for diagnostic use; difference between therapeutic and diagnostic drugs. Classification of diagnostic medicines used in Radiology and Nuclear Medicine. Pharmacokinetic and pharmacodynamic properties. General definition of efficacy and safety; CT contrast media: chemical classification of contrast media used in CT; physical and biological bases of the signal obtained through the contrast agents used in CT; notes on safety and interaction with concomitant treatments; technical data sheets of CT contrast media.
? Causes and classification of states of shock, acute respiratory failure, acute alterations of states of consciousness. Resuscitation techniques and basic first aid principles (alert the rescue system; implement first aid interventions; acquire practical intervention skills). Mechanisms of action of local anesthetics, notes on general anesthesia/sedoanalgesia

Prerequisites

Biomedical Sciences

Teaching form

The frontal lessons will be held in mixed mode in presence with occasional remote sessions (synchronous mode): the majority of the lessons will be held in delivery mode with a part in interactive mode. In the context of interactive lessons, elearning platforms will be used for quizzes to be carried out in class to then be used for self-assessment and Wooclap. This tool offers various features, such as polls, quizzes and real-time discussions, in order to make lessons more engaging and participatory for students and encourage active interaction during teaching sessions, allowing students to receive immediate feedback on their learning. In addition, audiovisual materials will be used, which constitute a valid support to facilitate the understanding and memorization of the concepts covered. The integration of these tools aims to make the learning process more dynamic and accessible for students.

Textbook and teaching resource

For the general pharmacology part, the following are recommended: "Farmacologia generale e speciale per le lauree sanitarie triennali" by Cella, Di Giulio, Gorio, and Scaglione (Ed. Piccin). "Farmacologia generale" by Collino, Cicala, and Ialenti (Ed. UTET). The teacher will provide additional teaching material, including lesson slides. For radiopharmacology and introduction to diagnostic agents, students' preparation will be based on the slides of the lessons held and on self-assessment quizzes of learning. For anesthesiology and first aid: Ranieri, Mascia, Terragni, Urbino: Elementi di Anestesiologia e Terapia Intensiva. The teacher will provide other material (lesson slides)

Semester

Second semester

Assessment method

Written and oral exam. The written test will consist of:
? 22 multiple choice questions and open questions on Pharmacology
? 11 multiple choice questions and open questions on Anesthesiology and First Aid
The oral test will concern the Pharmacology and Introduction to Diagnostic Agents module.

Office hours

By appointment required by mail

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION