Syllabus Master's Degree Course in Medicine and Surgery

BASICS OF DIAGNOSTICS AND PHARMACOLOGY

Third year, first semester (5 academic credits [CFU])

Teachers

Subject	Academic credits (CFU)	Lecturer
General pharmacology	3	DRAGO Filippo
Introduction to diagnostic imaging	2	BASILE Antonello

Learning outcomes

Subject	Learning outcomes
General pharmacology	By the end of the course, students are expected to: • Explain the fundamental principles of pharmacokinetics and pharmacodynamics. • Describe the mechanisms of drug action and the basis of drug-receptor interactions. • Identify key factors influencing drug safety, efficacy, and individual variability in drug response. At the end of the course the student will understand the essential concepts governing drug action, disposition, and clinical application.
Introduction to diagnostic imaging	By the end of the course, students are expected to: • Describe the physical principles underlying the main diagnostic imaging modalities. • Identify the indications, advantages, and limitations of conventional and advanced imaging techniques. • Recognize the basic anatomical features and common pathological findings in standard imaging studies. At the end of the course the student will understand the role of diagnostic imaging in clinical practice and the principles guiding the appropriate selection and interpretation of imaging modalities.

Prerequisites

Subject	Prerequisites
General pharmacology	Attainment of the educational objectives set by prerequisite courses.
Introduction to diagnostic imaging	

Course contents

Subject	Course contents
General pharmacology	• Introduction to pharmacology: definitions and scope • Pharmacokinetics: absorption, distribution, metabolism, excretion • Pharmacodynamics: drug-receptor interactions, dose-response curves • Therapeutic index, efficacy, potency • Factors influencing drug action: age, genetics, disease states, drug interactions • Adverse drug reactions and drug toxicity • Tolerance, dependence, and addiction • Drug development and regulatory approval • Principles of rational drug use in clinical settings • Overview of major drug classes (selected examples)
Introduction to diagnostic imaging	• Basic concepts in medical imaging: overview and historical background • Physics of X-rays and radiographic imaging • Principles of ultrasound imaging • Basic concepts of computed tomography (CT) • Principles of magnetic resonance imaging (MRI) • Introduction to nuclear medicine (SPECT, PET) • Indications and limitations of each imaging modality • Radiation safety and protection • Systematic approach to interpreting standard radiological images • Clinical applications: examples from chest, abdomen, and musculoskeletal imaging

Assessment methods

Subject	Assessment methods
General pharmacology	The final assessment of acquired knowledge is conducted by an oral exam. The grade is expressed on a scale of thirty, up to a maximum of 30/30 cum laude (with honors). The final grade is determined by the weighted average of the scores obtained in the course subjects. The oral examination consists of an interview during which questions will cover at least three different topics from the course curriculum. The assessments aim to evaluate: i) the level of knowledge in the disciplines; ii) the ability to apply this knowledge to solve specific problems related to the disciplines (autonomous problem-solving); iii) clarity of expression; iv) proficiency in medical-scientific language. The assessment of learning can also be conducted remotely if the conditions necessitate it. For the assignment of the final grade, the following parameters will be considered: • Score 29-30 with honors: The student demonstrates an in-depth knowledge of the topics, promptly and correctly integrates and critically analyzes presented situations,

Introduction to diagnostic imaging	independently solving even highly complex problems. They possess excellent communication skills and command medical-scientific language proficiently. • Score 26-28: The student has a good understanding of the topics, is able to integrate and critically and logically analyze presented situations, can fairly independently solve complex problems, and presents topics clearly using appropriate medical-scientific language. • Score 22-25: The student has a fair understanding of the topics, although it may be limited to the main areas. They can integrate and critically analyze presented situations, although not always in a linear fashion, and present topics fairly clearly with moderate language proficiency. • Score 18-21: The student has minimal knowledge of the topics, possesses modest ability to integrate and critically analyze presented situations, and presents topics sufficiently clearly, although their language proficiency may be underdeveloped. • Exam not passed: The student lacks the minimum required knowledge of the core content of the course. Their ability to use specific language is minimal or nonexistent, and they are unable to independently apply acquired knowledge.

Examples of common questions and/or exercises

Subject	Examples of common questions and/or exercises
General pharmacology	• What are the main phases of pharmacokinetics? • What is the difference between potency and efficacy? • How is drug half-life calculated? • What factors can affect drug metabolism? • What is a dose-response curve? • What are the main types of adverse drug reactions? • What happens when two drugs interact?
Introduction to diagnostic imaging	• What are the main imaging techniques used in clinical practice? • How does an X-ray image work? • What are the advantages of ultrasound? • What is the difference between CT and MRI? • What findings are typical of pneumonia on a chest X-ray? • When should MRI be preferred over CT? • How can radiation exposure be reduced?

Reference texts

Subject	Textbooks
General pharmacology	• Katsung's Basic and Clinical Pharmacology, 16th edition, McGraw Hill • Goodman and Gilman's. The pharmacological basis of therapeutics, McGraw Hill Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.
Introduction to diagnostic imaging	• Herring W. Learning Radiology. Elsevier Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.

Course format

Subject	Course format
General pharmacology	Teaching will be primarily delivered through in-person lectures, combining theoretical instruction with practical exercises. If teaching is conducted in blended or remote mode, appropriate adjustments will be made to ensure alignment with the objectives and content outlined in the Syllabus.
Introduction to diagnostic imaging	

Attendance

Subject	Attendance
General pharmacology	Mandatory attendance.
Introduction to diagnostic imaging	

Course schedule

Subject	Course schedule
General pharmacology	Students may refer to the recommended textbooks to identify the correspondence between the topics covered in the syllabus and the relevant chapters.
Introduction to diagnostic imaging	