EDUCATIONAL OBJECTIVES FOR THE DEGREE COURSE IN MEDICINE AND SURGERY

- PHARMACOLOGY COURSE

TEACHING Course	PHARMACOLOGY

Course Year *V year*
Delivery period *PHARMACOLOGY-1 PART: I semester*
PHARMACOLOGY: II semester
University Training Credits (CFU/ETCS):
PHARMACOLOGY-1 part: 4 CFU;
PHARMACOLOGY: 6 CFU;
TOTAL 10 CFU
SSD BIO/14- PHARMACOLOGY
Language of delivery *English*
Mode of attendance: *Lectures. Attendance obbligation (66% on the whole course).*

Designated Teacher	

PHARMACOLOGY-1 part: 4 CFU
Name and Last Name: ***Jean Francois DESAPHY (CFU 2)***
e-mail address: jeanfrancois.desaphy@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

Name and Last Name: ***Concetta ALTAMURA (CFU 1)***
e-mail address: concetta.altamura@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

Name and Last Name: ***Vanessa DESANTIS (CFU 1)***
e-mail address: vanessa.desantis@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

PHARMACOLOGY: 6 CFU
Name and Last Name: ***Monica MONTAGNANI (CFU 2)***
e-mail address: monica.montagnani@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

Name and Last Name: ***Concetta ALTAMURA (CFU 3)***
e-mail address: concetta.altamura@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

Name and Last Name: ***Vanessa DESANTIS (CFU 1)***
e-mail address: vanessa.desantis@uniba.it
Department: Department of Precision and Regenerative Medicine and Ionina Area – DIMEPRE-J

Teaching Organization	

PHARMACOLOGY-1 part (I semester) - Hours
Total /Lectures / Personal learning
100 / 48 / 52
PHARMACOLOGY (II semester) - Hours
Total /Lectures / Individual learning
150 / 72 / 78

Teaching Goals	

The teaching aims to provide the student with knowledge of the rational basis of pharmacotherapy and the clinical applications of drugs. At the end of the course, the student must be able to evaluate and describe the general properties of a drug and to envisage its possible therapeutic uses, taking into account the structure, the mechanism of action, the kinetics as well as the relationship between pharmacological and toxicological effects.

Expected Learning Outcomes	

By re-elaborating concepts from both lessons and individual study, students must have acquired knowledge on the fundamental mechanisms that regulate pharmacokinetics and cellular and molecular pharmacology; the main factors responsible for the variability in response to drugs; the mode of action, side effects, pharmacological interactions, indications and limitations to the clinical use of drugs active on the endocrine, gastrointestinal, respiratory, cardiovascular and main neurotransmission systems. Students must also have gained knowledge on the clinical use of anti-inflammatories, antimicrobial, antibiotic and antiviral drugs, as well as of traditional and novel biological antineoplastic agents. By integrating the knowledge and understanding acquired with this course with those derived from previous/concomitant biomedical and clinical courses of the Medical degree course, the student must be able to know the rational basis of the clinical use of drugs and predict the pharmacological effects both from the diagnostic-therapeutic and toxicological point of view.

- *Knowledge and understanding*
  Students must demonstrate that they understand the topics of the Pharmacology program

- *Ability to apply knowledge and understanding*
  Students must be able to apply the knowledge acquired for the correct use of drugs in the diagnostic, preventive, curative and surgical support fields

- *Autonomy of judgement*
  Students, through the independent study of the notions learned and according to the ethical principles of reference, must be able to develop good autonomy of judgment and analysis of the problems related to the use of drugs

- *Communication skills*
  Students will have to acquire the ability to transmit the knowledge learned in a clear and comprehensible way, keeping in mind the importance of adequate communication-relational skills and suitable language skills in building relationships with specialist (doctors) and non-specialist (patients) interlocutors.

- *Learning ability*

Students will have to acquire the correct methodological approach to the study of the subject and the ability to refine and deepen their knowledge, continuing independently in updating the skills necessary to carry out the role of physician.

Teaching Program	**PHARMACOLOGY**

General concepts:

Definition of drug, medical specialty, poison. Nature and origin of drugs. Simptomatic, causal, preventative and replacement treatments. Generic drugs. Biological drugs. Tolerance, idiosyncrasy, allergic reactions. Preclinical and clinical drug development. Post-marketing surveillance

Pharmacokinetics:

Routes of administration.

Absorption: cell membrane passages; bioavailability; first-passage effects

Distribution: protein binding; blood brain barrier; fetomaternal placental unit. Compartmentalization. Distribution volume

Metabolism: hepatic biotransformation; pro-drugs; enzymatic induction and inhibition. CYP450 polymorphisms.

Excretion: renal, hepato-biliary, pulmonary elimination; clearance; half-life

Pharmacodynamics:

Drug targets: generalities on receptors, enzymes, carriers, pumps, ion channels. Membrane receptors (GPCR, ligand-activated ion receptors, voltage-activated ion channels). Intracellular receptors (nuclear and cytoplasmic receptors)

Drug-receptor interactions: agonists, partial agonists, antagonists (competitive or non competitive). Affinity, saturability, effectiveness, efficacy, potency. Definition of ED50; LD50; therapeutic index (TI). Definition of up-regulation/down-regulation, desensitization

Specialty Pharmacology (II semester):

Drugs of the cardiovascular system – anti-hypertensive agents, positive inotropic drugs, anti-arrhythmics, anti-ischemic drugs, diuretics, anti-aggregants and anti-coagulants

Drugs of the gastroenteric system – gastroprotectors, anti-ulcerative drugs, anti-emetics, pro-kinetics, drugs to treat constipation and diarrhea.

Drugs of the respiratory system – anti-asthmatic drugs – cough suppressants, expectorants, mucolytics

Drugs of the endocrine system – insulin and analogues – anti-diabetics – anti-dislipidemic drugs – steroids and synthetic analogues – drugs of the bone metabolism

Drugs to treat inflammation – non steroidal anti-inflammatory drugs – steroidal anti-inflammatory drugs – COXIB

Drugs of the Central Nervous System - anxiolytics - hypnotic sedatives – anti-depressants – anti-psychotics – anti-epileptics - anti-Parkinson drugs – opioids – local and general anesthetics – myorelaxants – neuromuscular blockers

Chemotherapy – antimicrobial agents – anti-fungal drugs – antivirals - antineoplastic agents (traditional, biological, target therapy) – immunomodulators/immunosuppressants – hormonal agents

Evaluation	

Evaluation Methods By oral examination

Evaluation criteria Learning will be verified on the entire program at the end of the whole course (first and second semester).

The oral test, carried out in person, will be structured on questions relating to drugs relevant to the main areas of study (Neuropsychopharmacology - Pharmacology of the Cardiovascular System - Antineoplastic chemotherapy drugs - Anti-infective drugs - Endocrine system drugs). The evaluation parameters of the oral test will take into account the ability to logically organize knowledge, to develop critical reasoning on the topic, to develop an appropriate vocabulary and to possess correct expression skills. The student's ability to focus and discuss on the description of the mechanisms of action, the methods of administration, the correctness of the indications and the evaluation of the risk/benefit ratio will be assessed. The final judgement, expressed in a range between sufficient (18/30) and optimal (30/30 and PRAISE), will consider, for the attribution of the PRAISE on the proposal of the President and in the unanimous consent of the Commission members, also the quality of presentation, in terms of the use of appropriate scientific language, and the autonomy of reasoning and judgment demonstrated by the candidate.

Recommended Textbooks	

- Goodman & Gilman: "*The Pharmacological basis of Therapeutics*" - McGraw-Hill Meli
- "*Rang* and Dale's *Pharmacology* " - Elsevier Science Health Science
- "*Katzung's Basic and Clinical Pharmacology*" - McGraw Hill