# COURSE SYLLABUS (64 Hours)

**1.Introduction:** Definition of drugs. Definition of pharmacology. Non-clinical pharmacology. Clinical pharmacology. Elements on the discovery and development of medicines. Pharmacology position in relations with other biomedical sciences, with the drug industry, public authorities. Short history of pharmacology.

**2. General Pharmacology**

* General pharmacodynamics: pharmacological method. Demonstration of actions and mechanisms of action of a drug. Pharmacological receptors. Actions of drugs at a molecular level at the cellular level, organ level, at the level of organs and systems of the organism as a whole.
* General pharmacokinetics: fundamental processes underlying pharmacokinetics. Crossing biological membranes. Absorption of drugs. Distribution of medicines. Drug elimination. The pharmacokinetic parameters.
* General pharmacotoxicology: Defining side effects. Factors influencing the frequency of adverse reactions. Types of adverse reactions. Assessment of adverse reactions. Monitoring of adverse reactions. Elements of pharmacoepidemiology. Pharmacovigilance. Prevention and treatment side effects.
* Drugs in Pregnancy and lactation:, pharmacokinetics and pharmacotoxicology of drugs administered during pregnancy and lactation.
* Drugs in the Elderly: Pharmacodynamic features, pharmacokinetics and pharmacotoxicology of drugs administered to the elderly.

# 3. Influencing the peripheral innervation through medication

 - Pharmacological influence on the nervous system

 - Cholinergic system: Parasympatheticomimetic. Parasympatholytics. Nicotinic substances. Ganglionic substances. Curare derivatives. Anticholinestherase drugs.

# - Adrenergic system: sympatheticomimetic. Sympatholytics. Ergot derivatives

# 4. Influencing the central nervous system innervation through medication

# - The overall change in activity of the nervous system: General anesthetics. Inhaled general anesthetics. Intravenous general anesthetic.

- Local anesthetics: Local anesthetics with amidic structure. Local anesthetics with esther structure.

- Sedative - hypnotics: Benzodiazepines. Barbiturates. Other sedatives. Other hypnotics.

- Psychomotor stimulants..

# 5. Influencing the cognitive function

* Antipsychotics
* Alzheimer’s disease’s medication.
* Cognitive enhancers (Smart drugs)

# 6. Influencing the affective status

- Antidepressants.

- Antimaniacals.

- Mood stabilizers.

- Anxiolytics.

# 7. Medicines with particular effects on the central nervous system

- Anti-Parkinson’s disease medication.

- Anticonvulsants.

- Central nervous-muscle relaxants.

-Opioid analgesics and antagonists: Opioid receptor agonists; agonists, opioid receptor antagonists; opioid receptor antagonists; other opioids

# 8. Toxicomany and addiction: General aspects of toxicomany and addiction

# 9. Influencing the autacoid system through medicines

- Influencing the eicosanoid system.

- Histamine and antihistamines.

- Influencing other autacoid systems: serotonin, kinins, angiotensin, nitric oxide, endothelin

# 10. Influencing the hormonal function through medicine

-Glucocorticoids and mineralocorticoids. Glucocorticoids. Corticotropin and Tetracosactide. Mineralocorticoids.

- Thyroid hormones and antithyroids substances: Thyroid hormones. Thyroidian substances. Iodine and iodides. Radioiodides.

- Insulin, oral antidiabetics, glucagon.

- Somatotropin, somatostatin, prolactin and bromocriptine.

- Sex Hormones: Estrogens. Progestins. Testosterone. Antiestrogens. Antiprogestatives. Antiandrogens. Gonadotropins and Gonadorelin.

- Anabolic substances.

# 11. Methabolic medication:

- Calcium and phosphates.

-The regulators of bone mineral homeostasis: Parathyroid hormone. Vitamin D. Calcitonin. Glucocorticoids. Estrogens.

- Osteoporosis medication: Bisphosphonates. Fluoride.

# 12. Cardio-Vascular medication:

-Digitalis and other positive ionotropics: Digitalic glicozides. Sympatheticomimetic. Phosphodiesterase inhibitors.

- Vasodilators for the treatment of heart failure.

- Antiarrhythmic drugs: sodium channel blockers antiarrhythmic drugs (class I). β adrenergic blockers antiarrhythmics (class II). Antiarrhythmics which prolong the action potential (Class III). Calcium channel blockers, antiarrhythmics (class IV). Other antiarrhythmic drugs.

- Angina medication: organic nitrates. β adrenergic blockers. Calcium channel blockers -Antihypertensive medication: Sympatholytics. Direct vasodilators. Calcium channel blockers. Inhibitors of the renin-angiotensin-aldosterone system. Diuretics as antihypertensives.

- Vasoactive medication: Vasodilators. Vasoconstrictors

# 13. Diuretics and antidiuretics

- Diuretics: Henle-Loop diuretics. Thiazide diuretics. Antialdosterone diuretics. Diuretics carbonic anhydrase inhibitors. Osmotic diuretics.

- Antidiuretics: Vasopressin. Other drugs useful in the treatment of diabetes insipidus.

# 14. Respiratory system medication

- Antiasthmatics: sympatheticomimetic bronchodilators. Parasympatholytics bronchodilators. Bronchodilators musculotropes. Mast-cell degranulation inhibitors. Glucocorticoids for asthma. Lipoxygenase inhibitors and leukotriene antagonists.

- Antitussives, expectorants and surfactant

# 15. Digestive system medication

- Anti-ulcer medication: Antacids. Inhibitors of gastric secretion. Gastroduodenal mucosal protectors. H. Pylor anti bacterial associations.

- Substitutes and stimulants for digestive secretions: substitutes and stimulants of clorhidro-peptic gastric secretion. Pancreatic enzymes. The bile acids.

- Motility agents: Benzamide substitutes. Benzimidazole derivatives. Compounds cholinergic used as Prokinetics. Motilin analogues.

- Antispasmodics: neurotropic antispasmodics ;. Antispasmodics musculotropes.

-Antivomitives: Antihistamines used to prevent vomiting. Dopamine D2 receptor antagonists. Anticholinergics used to prevent vomiting. 5-HT3 receptor antagonists. Cannabinoids.

-Antidiarrhoeal Medicines: Opioids used as antidiarrhoeals. Parasympatholytics used as antidiarrhoeals. Compounds that increase the viscosity of intestinal contents and adsorbent and protective properties.

- Laxatives and purgatives: Volume laxatives. Saline purgatives. Intestinal prokinetic puratives. Laxatives acting through the soaking of the seat.

- Medication for Crohn's disease and ulcerative colitis: Bowel Anti-Inflammatory medicine. Glucocorticoids. Immunosuppressive agents and immunomodulators. Antimicrobial agents .

# 16. Blood medication

- Antianemic medicine: iron. Vitamin B12 and folic acid.

- Hematopoietic growth factors.

- Antithrombotics: antiplatelet agents. Anticoagulants. Fibrinolytic agents.

- Haemostatics: local haemostatics. Systemic haemostatics.

- Hypolipidemics: Fibrates. Statins. Other hypolipidemics.

# 17. Genital system medication

- Ocitocins: Oxytocin; Prostaglandins. Ergometrine.

- Tocolytics: beta-adrenergic stimulants. Other uterine relaxants.

- Erectile dysfunction medication.

- Systemic hormonal contraceptives: estroprogestative associations. Progestogens for contraception as a single medication. Estrogens as a single drug for contraceptive purposes.

# 18. Antirheumatical medication

-Analgesics, antipyretics and NSAIDs. Salicylates. Paraaminophenol derivatives. Pyrazolone derivatives. Indoleacetic acids and analogs. Arylaliphatic acids. Fenamates. Oxicames. Anti-inflammatory selective COX-2 inhibitor.

- Drugs with specific action in rheumatoid arthritis: gold compounds. Antimalarials. Penicillamines. Sulfasalazines. Immunosuppressive and / or cytotoxics. Anti-TNF-alpha.

- Anti-gout medication: active drugs in gouty crises. Uricosuric drugs. Uricoinhibitors drugs.

# 19. Chemotherapics

- Antibacterial agents: Defining the concept of antibacterial chemotherapy. Action of antibacterial agents at the molecular level. Bacterial resistance to chemotherapeutic agents. The pharmacokinetics of antibacterial agents. Pharmacological features of antibacterial agents. Penicillins. Cephalosporins. Carbapenems. Monobactames and tribactames. Aminoglycosides. Tetracyclines. Chloramphenicol. Antibacterial macrolides. Lincosamides antibiotics. Glycopeptide antibiotics. Polypeptide antibiotics. Tuberculosis chemotherapy. Active chemotherapy in leprosy. Antibacterial sulfonamides and trimethoprim. Antibacterial quinolones. Urinary antiseptics.

- Antiviral chemotherapy: Characteristics of antiviral chemotherapy. Molecular mechanism of action of antiviral chemotherapy. Specifics of virus resistance to antiviral drugs. Features of the therapeutic efficacy of antiviral chemotherapy. The spectrum of activity of antiviral drugs. Pharmacological features of antiviral chemotherapy. Antivirals active against influenza virus. Antiviral active against herpes virus. Antivirals active against HIV. Other antivirals. Interferons.

- Antifungal chemotherapy: Characteristics of antifungal chemotherapy. The molecular mechanism of action of antifungal chemotherapy., Characteristics of fungi resistance to antifungal drugs. Specifics of antifungal therapeutic efficacy of chemotherapeutic agents. The spectrum of activity of antifungal agents. Pharmacological features of antifungal chemotherapy.

- Antiparasitic chemotherapeutic agents: antimalarial chemotherapy. Active chemotherapy in amebiasis, trichomoniasis and giardiasis. Anthelmintic chemotherapy.

- Cancer chemotherapeutic agents and immunosuppressants: Partucularities of cancer chemotherapeutic agents. Molecular mechanisms of action of cancer chemotherapeutic agents. Molecular mechanisms of influencing the immune system by anti-cancer drugs. The pharmacokinetics of cancer chemotherapeutic agents. Elements of clinical efficacy of anticancer drugs. Pharmacological features of anticancer medicines. Alkylating agents. Other preformed DNA-damaging anticancer drugs. Anti-metabolites. Spindle toxins. Anticancer drugs with greater specificity of action. The hormones used in the treatment of cancer. Immunosuppressants.