

Course Title	Pharmacology I				
Course Code	PHA309				
Course Type	Compulsory				
Level	BSc (Level 1)/ MPharm (Level 2)				
Year / Semester	3 rd (6 th Semester)				
Teacher's Name	Dr Charalampos Triantis, Dr N. Drakoulis				
ECTS	6	Lectures / week	3	Laboratories/week	2
Course Purpose	The aim of the subject is to provide students with proper knowledge about biological and pharmacological effects of the drugs and their applications. Furthermore, aims at teaching how to interpret phenomena such as drug resistance and drug sensitivity, teach how a compound can be used for specific pharmacological or biological purpose and how its action can be verified.				
Learning Outcomes	<p>By the end of this course, the students are expected to be able to:</p> <ul style="list-style-type: none"> • Define and describe pharmacology as a science, its aim, the different types of drugs, their classification according to pharmacological action, ways of use and routes of administration (parenteral, non-parenteral, oral, otologic, nasal, rectal, transdermal, inhalational). • Explain the action of a compound in molecular, cellular, tissue, visceral, organ system and whole- organism level. • State the biological and pharmacological properties of the common drugs. • Distinguish pharmacodynamic and chemotherapeutic agents and their differences. • Describe immunization, immunization agent, vaccines (indications and precautions) as well as the usefulness of various drugs and devices. • Explain eating habits, demand in nutritional elements, protein, carbohydrates, lipids, vitamins, inorganic elements. Special reference to nutritional demands during infancy and adolescence. • Conceptualize the pharmacology of Autonomic Nervous System, its connection to various diseases and the main drug categories relevant to Autonomic Nervous System and neuromuscular junctions. • Recognise allergies, causes, symptomatology with special reference to allergic rhinitis and its treatment. • Define drugs of the respiratory system such as antihistamines, decongestants, antitussives, expectorants, mucolytics and bronchodilator drugs. • List the main drugs used against gastrointestinal disorders (antacids, H₂ receptor antagonists, antispasmodics, anticholinergics, laxatives, antidiarrheals, antiemetics), the indications and contraindications of these drugs. • Recognise the various drugs and formulations against urological, hepatobiliary and bone disorders. • Explain the use of drugs in ophthalmic diseases (antibiotics, steroidal 				

	<p>and non- steroidal drugs, anti-inflammatory drugs, drug combinations, local anesthetics, myotics and mydriatics, anti-glaucoma and anti-cataract drugs.</p> <ul style="list-style-type: none"> Recall the various dermatological formulations such as antiseptics, antimicrobials, anti-acne drugs, antifungals, virostatics, antiparasitics, anti-inflammatory drugs, antihistamines, healing and regenerative agents, as well as local anesthetics, analgesics and keratolytics. Analyse inflammation, its connection to various pathological conditions and the main non- steroidal anti-inflammatory drugs used in therapy. Describe antibiotic agents, their classification and their spectrum, routes of administration, indications and contraindications. Antiseptics and disinfectants. Define anti-neoplastic factor and the most important anti-cancer drugs, precautions concerning their use, patient preparation, and evidence of toxicity. Analyze the possible or expected therapeutic applications of a compound. Describe the methodology and ways of prescribing, including the Latin abbreviations and terms. 		
Prerequisites	PHA108 PHA205	Corequisites	None
Course Content	<p>Theory</p> <ul style="list-style-type: none"> Introduction to pharmacology: Pharmacological classification of drugs. Principles of drug therapy. Pharmacokinetics and Pharmacodynamics. Routes of administration. The role of nurses in drug administration. Drugs affecting the Autonomic Nervous System: Cholinergic and adrenergic agonists and antagonists Drugs affecting Respiratory system: Asthma, Chronic Obstructive Pulmonary Disease. Cough remedies. Antihistamines, decongestion, expectoration, bronchodilators and mycolytic drugs Drugs affecting Gastrointestinal system: Peptic ulcer and gastroesophageal reflux. Proton-pump inhibitor, H₂ inhibitors, antacids, anti-emetics, laxatives, antidiarrhoea drugs. Drugs affecting Urinary system: Benign Hyperplasia Prostate. Erectile Dysfunction Non Steroids Anti-inflammatory drugs: Analgetics. Rheumatoid arthritis. Migraine. Chemotherapy: Antibacterial drugs: Antibiotics, antiseptics and disinfectants. Antifungal and antiviral agents: treatment of HIV disease. Anticancer Drugs. Immunosuppressants. <p>Laboratory experiments/exercises and case studies:</p> <p>As part of the course, laboratory exercises are carried out on the course material for a better deepening and consolidation of the theoretical part. Clinical case studies and analysis of data from research articles are also included.</p> <p>Clinical case studies</p>		

	<ol style="list-style-type: none"> 1. Asthma 2. Cancer 3. Bacterial and viral infections 4. Critical revision of data of the activity of proton pump inhibitors on gastroesophageal reflux <p>Exercises</p> <p>Exercise 1: In silico study of the potential pharmacological properties and actions of compounds of pharmaceutical interest</p> <p>Exercise 2: Analysis of binding of the salicylic acid with plasma proteins</p> <p>Exercise 3: Determination of the antimicrobial activity of antibiotics and drug resistance testing</p> <p>Exercise 4: Carrageenan induced inflammation and determination of the anti-inflammatory activity of Indomethacin.</p> <p>Exercise 5: Determination of the cytotoxic activity of anti-cancer drugs</p>
Teaching Methodology	<p>The teaching methodology includes lectures offering the theoretical background for a better perception of concepts of Pharmacology. Methods such as discussion, questions/answers, pros/cons, role playing and case studies are used to enhance student's participation. Flipped classroom, group-based learning and peer-feedback methods will also be implemented. The students have the opportunity to work in teams and discuss their findings with the professor. In addition, recent scientific results and review studies are included. Detailed notes with PowerPoint are used in the lesson. Image-rich material and short animations are used to comprehend some biological processes. The laboratory part of the course is conducted in the Pharmaceutical Lab under the supervision of the professor/lab instructor.</p>
Bibliography	<p>(a) <u>Textbooks:</u></p> <ul style="list-style-type: none"> • Pharmacology, Lippincott, K. Whalen, R. A. Harvey. Wolter Kluwer. 6th ed, 2015 • R. Harvey. Lippincott Pharmacology, 6th edition, Greek Publisher Parisianos, 2015 <p>(b) <u>References:</u></p> <ul style="list-style-type: none"> • K. Whalen. Lippincott Pharmacology, 7th edition, 2019 • "Goodman and Gilman's The Pharmacological Basis of Therapeutics", (13th Edition). Laurence Brunton, Randa Hilal-Dandan, Bjorn Knollmann. McGraw-Hill Education 2017 • "Basic & Clinical Pharmacology", Katzung G. Bertram, 1st Ed, Publisher Medical Publication Pashalidis, 2009
Assessment	<p>All written exams conclude open questions and multiple choice questions</p> <p>Coursework 40%</p> <ul style="list-style-type: none"> • Midterm written exam 20% • Lab reports and Case study presentation 20% <p>Final written exam 60%</p>

	<p>The evaluation of the course is performed by (a) a written mid-term exam during the semester, which examines specific modules of the course and it accounts for 20% of the overall grade, (b) the laboratory reports during the semester, in which students present the collected and analysed experimental data as well as their conclusions, derived from theory and the experimental data which accounts for 20% of the overall grade, and (c) a written final exam, which examines all modules of the course, and it accounts for 60% of the overall grade.</p> <p>Students are prepared for the above written exams by discussion, questions/answers, pros/cons and case studies, related to the field of Pharmacology, in the class. Additional material and exercises are given to them for further practice at home. For a better comprehension of the subject, frequent revisions are performed at regular time intervals.</p> <p>Questions of gradual difficulty apply to the evaluation of the mid-term and final examination. There may be multiple choice or right/wrong questions with justification of the answers or issue analysis and problem solving questions may be applied in order to evaluate the knowledge and perception of the student on the subject.</p> <p>For the evaluation of laboratory exercise reports, the following criteria shall be taken into account, with ratios varying according to the laboratory exercise:</p> <ul style="list-style-type: none"> (a) data collection (b) data analysis (c) application of theory to draw conclusions <p>The above criteria and assessment tools, as well as their weight, are communicated to the students, and are formulated in such a way in order to maximize the expected learning outcomes as well as the quality of the course.</p>
Language	Greek, English