

Course Title	Physical Pharmacy				
Course Code	PHA208				
Course Type	Compulsory				
Level	BSc (Level 1)/ MPharm (Level 2)				
Year / Semester	2 nd (4 th Semester)				
Teacher's Name	Dr Th. Karydas, Prof. S. Malamataris				
ECTS	6	Lectures / week	3	Laboratories/week	2
Course Purpose	<p>The aim of this course is the knowledge of various physical and physicochemical techniques in Pharmacy, as well as the study of stability and control of drug preparations. Another aim is the study of phenomena used in contemporary branches of Pharmaceutical Sciences, like freeze drying, liposome- and cyclodextrin- encapsulation techniques, also used in related sciences, like cosmetology and food industry. Knowledge of pharmaceutical dispersion systems and particle size dispersion is another aim of this subject. Further aim is the study of physical phenomena frequently used in Pharmaceutical - Medicinal Chemistry, like adsorption, absorption and desorption.</p>				
Learning Outcomes	<p>By the end of this course, the students should be able to:</p> <ul style="list-style-type: none"> • Describe the crystalline and undefined structure of solids and the significance of particle size • Apply grinding and drying of solids • List the factors affecting the solubility of drugs, such as pharmacophore characteristics, crystalline structure, lipophilicity, surface area, pKa and ionization state • Analyse how the pH affects drug ionization • Describe about drug distribution between two immiscible phases and blood diffusion properties • State the surfactants used in Pharmacy and their properties • Describe micelles and list the factors affecting their formation • Analyse about colloid stability • State emulsions, suspensions and aerosols used in Pharmacy • Analyse Know about Newtonian and non- Newtonian systems, thixotropy and viscosity • Describe the structure, properties and applications of polymers in Pharmacy • Analyse about the studies of reaction rates and reaction rate constant for a reaction • List the factors affecting drug stability • List the factors affecting drug delivery • Describe the characteristics of routes of drug administration for systematic or local effect • Familiarize with the main elements of pharmaceutical nanotechnology • Analyse the use of nanoparticles in Pharmacy as drug carries 				

Prerequisites	PHA201	Corequisites	None
Course Content	<p>Theory:</p> <ul style="list-style-type: none"> • Solids • Solubility and solution properties of drugs • Surfactants (emulsions, suspensions and other dispersed systems) • and dispersed systems • Rheology • Polymers • Drug stability • Drug absorption & route of administration • Pharmaceutical nanotechnology <p>Laboratory experiments/exercises:</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. Indicative exercises are: measurement of size of solid particles, membrane permeability, polymers and nano-colloids</p>		
Teaching Methodology	<p>The teaching methodology includes lectures offering the theoretical background for a better perception of some concepts of Physical Pharmacy. Methods such as discussion, questions/answers, pros/cons and problem solving, are used to enhance student's participation. Detailed notes with PowerPoint are used in the lesson.</p> <p>As part of the developing students' skills, laboratory exercises are carried out by the students themselves in the Pharmaceutical Lab with the proper laboratory equipment and under the supervision of teaching personnel. Appropriate preparation and demonstration by the laboratory personnel is preceded by each laboratory exercise. Assessment of laboratory exercises is performed by submitting laboratory reports.</p>		
Bibliography	<p>(a) <u>Textbooks:</u></p> <ul style="list-style-type: none"> • Physical Pharmacy. David Atwood, Alexander T Florence. Greek Publisher Parisianos, 2014 • Physical Pharmacy. David Atwood, Alexander T Florence. Pharmaceutical Press, 2nded, 2012 <p>(b) <u>References:</u></p> <ul style="list-style-type: none"> • FASTtrack: Physical Pharmacy. David Atwood, Alexander T Florence. 3rd Edition. 2020 • Φαρμακευτική Τεχνολογία Ι. Αρχές Φαρμακευτικής Φυσικής και Νανοτεχνολογίας. Γ. Παπαιωάννου, Κ. Δεμέτζος, Μ. Βλάχου-Κωνσταντινίδου. Εκδόσεις Παρισιάνου ΑΕ, 2009 		

<p>Assessment</p>	<p>All written exams conclude open questions, multiple choice questions and problem-solving questions</p> <p>Coursework 40%</p> <ul style="list-style-type: none"> • Midtermwrittenexam20% • Lab reports 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, and it 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>The following criteria are taken into account when evaluating laboratory reports: (a) experimental data collection (30%), (b) data analysis (40%), and application of theory to draw conclusions (30%).</p> <p>Students are prepared for the above written exams by discussion, questions/answers, pros/cons and problem solving, related to the field of physical pharmacy, in the class, while additional problems are given to the students for further practice.</p> <p>The final assessment of the students is formative and summative and is assured to comply with the subject's expected learning outcomes and the quality of the course.</p>
<p>Language</p>	<p>Greek, English</p>