

Course Title	Pharmaceutical Technology I				
Course Code	PHA308				
Course Type	Compulsory				
Level	BSc (Level 1) / Integrated MSc (Level 2)				
Year / Semester	3 rd Year/ 6 th Semester				
Teacher's Name	Dr M. Malamatari, Dr Th. Karydas.				
ECTS	6	Lectures / week	3	Laboratories/week	2
Course Purpose	<p>The aim of this course is to provide knowledge on the preparation (compounding) of various pharmaceutical formulations, usually made in a pharmacy (community or hospital). Specifically, students will acquire skills and knowledge on prescription reading (types of prescription, control), the safe storage, supply and management of drugs, chemicals and poisons, the contents and objectives of the Pharmacopoeia, as well as the over-the-counter and non-prescription drugs (and the responsibility of the pharmacist) Also, during the course, the art and science of various chemical and physical unit operations will be studied, e.g.: Separation processes, Particle size separation, Blending and mixing of different systems, Powder flow and compaction, Film coating and drying, Solubilization and Lyophilization. Aim is also the description of the pharmaceutical research section, including the theoretical, drug design and synthetic sections, the preclinical research and the formulation sections.</p>				
Learning Outcomes	<p>By the end of the course, the students should be able to:</p> <ul style="list-style-type: none"> • Describe how to prepare, store, and apply the extemporaneous preparations made in the pharmacy. • Recognise how to read prescriptions. • Distinguish how to store, supply, and manage drug products (including controlled drugs), chemicals, poisons. • Analyse the content of the Pharmacopoeia and other relevant compendia, their objectives and use. • Apply the art and science of various chemical and physical unit operations and use devices that are frequently used before the final preparation of dosage forms • Recognise how the starting-incoming material must be kept treated and how the final products must be released • Apply the way a pharmaceutical factory works with the minimal negative effects on the environment. • Analyse the importance of the research section in a pharmaceutical industry for designing and developing new pharmacomolecules and new pharmacotechnological products; 				

Prerequisites	PHA208	Corequisites	None
Course Content	<p>Theory</p> <p>Procedures performed in the pharmacy laboratory for the preparation of various dosage forms (i.e. extracts, infusions, decoctions, solutions, syrups, elixirs, liniments, ointments, creams, suspension, emulsions, suppositories, tinctures, granules, and capsules). Also, chemical and physical unit operations and use devices that are frequently used before the final preparation of dosage forms.</p> <p>Recognizing the different types of prescriptions. Reading, checking, properly filling/classifying, and keeping prescriptions.</p> <p>How drugs (including controlled drugs), chemicals and poisons are managed and stored safely in the pharmacy, drug wholesale stores and hospitals.</p> <p>Pharmacopoeia, Pharmaceutical Codex and National Formulary: content, objectives, consultation, and use.</p> <p>Over-the-counter (OTC) drugs, principles of self-medication, role, and responsibilities of the pharmacist. Criteria for classifying drugs as OTC medications (e.g. active substances, indications, posology, dosage forms)</p> <p>Development of novel pharmacotechnological forms and delivery systems.</p> <p>Research section, design of novel molecules, of improved or novel technological products - drug releasing forms. Innovations in analytical methods.</p> <p>Laboratory experiments/exercises:</p> <p>As part of the course, laboratory exercises are carried out on the course material for a better understanding of the theoretical part. Indicative exercises are the following:</p> <p><i>Exercise 1:</i> Filling a prescription;</p> <p><i>Exercise 2:</i> Preparation of an infusion and a decoctio;</p> <p><i>Exercise 3:</i> Preparation of an ointment;</p> <p><i>Exercise 4:</i> Preparation of a cream;</p> <p><i>Exercise 5:</i> Preparation of an emulsion;</p> <p><i>Exercise 6:</i> Preparation of iodine tincture;</p> <p><i>Exercise 7:</i> Using the Pharmacopeia.</p>		
Teaching Methodology	<p>Teaching methodology includes lectures on theoretical background, and laboratory exercises to better understand the basic concepts of Pharmaceutical Technology. The lesson is delivered using PowerPoint presentations with detailed notes to help students better understand the theory. Methods such as discussion, questions/answers, pros/cons, brainstorming, debates, videos and cooperative learning are used to enhance the students' participation. Recent research results are included and discussed in the course (i.e. research-informed teaching). The laboratory part is conducted in the Laboratory of Pharmaceutical Technology supported by proper infrastructure/equipment and supervised</p>		

	<p>by the lab instructor/professor. Appropriate preparation and demonstration by the laboratory supervisor precedes each laboratory exercise. Assessment of laboratory exercises is done based on laboratory reports submitted by each student at the end of each lab exercise.</p>						
Bibliography	<ul style="list-style-type: none"> • "Remington: The Science and Practice of Pharmacy", A. Adejare, Elsevier Science / Academic Press; 23rd ed., 2020 • "Aulton's Pharmaceutics: The Design and Manufacture of Medicines", K.M.G. Taylor, M.E. Aulton, Elsevier; 6th edition, 2021 • A. Goyal, Textbook of Pharmaceutical Dispensing, Oxford and IBH Publishers; 1st edition, 2019. • Daniel L. Krinsky et al., Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care, 19th Edition, American Pharmaceutical Association, 2017. • C.A. Langley, D. Belcher, FAST Track: Pharmaceutical Compounding and Dispensing, 2nd edition, Pharmaceutical Press, 2012. • Lin Carter, Cooper and Gunn's Dispensing For Pharmaceutical Students, CBS Publisher & Distributors, 2010 • A.J. Winfield, R.M.E. Richards, Pharmaceutical Practice, Churchill Livingstone, 1998. • W. Lund, The Pharmaceutical Codex: Principles and Practice of Pharmaceutics (British Pharmaceutical Codex), Pharmaceutical Press, 1994. • D.M. Collett, M.E. Aulton, Pharmaceutical Practice, Churchill Livingstone, 1990. 						
Assessment	<table border="0" style="width: 100%;"> <tr> <td>Laboratory performance</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Midterm exam</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Final Examinations</td> <td style="text-align: right;">60%</td> </tr> </table> <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>Students are prepared for the above written exams by discussion, questions/answers, pros/cons, and case studies, related to the field of Pharmaceutical Technology, in the class and by using the e-learning platform of the University.</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>	Laboratory performance	20%	Midterm exam	20%	Final Examinations	60%
Laboratory performance	20%						
Midterm exam	20%						
Final Examinations	60%						
Language	Greek, English						