

Study program: Integrated academic studies of Pharmacy			
Type and level of the study program: integrated academic studies			
Course title: PHARMACEUTICAL TECHNOLOGY I (PhIV-PTECHI)			
Teacher: Mladena N. Lalić-Popović, Zoran P. Zeković			
Course status: compulsory			
ECTS Credits: 7			
Condition: General pharmacology			
Course aim Is explaining to the students of pharmacy the role of the retail pharmacy and its premises as well as with the literature that is used as the source of the information for the magistral and galenic compounding of pharmaceutical technological formulations like: powders, granules, capsules, tablets and suppositories for rectal and vaginal use.			
Expected outcome of the course: Students will acquire the knowledge and skills for the compounding of the pharmaceutical technological formulations, the testing of their quality, proper packaging, labeling and storage.			
Course description		16. Raw materials for the production/compounding of suppositories (active principles and excipients)	
<i>Theoretical education</i>		17. Methods of compounding/production of suppositories	
1. The role and importance of pharmaceutical technology (definitions and general concepts) Literature for use in pharmaceutical technology (Pharmacopoeia , FM , KI, INCI)		18. Testing suppository according to the official regulations	
2. Formulation and development and testing of powders for internal and external use		19. The packing, labeling and storage of suppositories	
3. Important properties of powders for manufacturing a solid pharmaceutical forms		<i>Practical education: exercises, other forms of education, research related activities</i>	
4. Aerosols		1. Compounding, packing , storage and method of powder dispensing (dusting powders , devided and undevided oral powders)	
5. Excipients in powder formulation (the role , importance and types)		2. Testing of powders according to official regulations	
6. Tablets (types, formulation)		3. Preparation for production of granules - direct compression and compression of granules	
7. Excipients in table formulations(the role , importance and types)		4. Tetsing of tablets according to official regulations	
8. Methods of tablet manufacturing (preparation of dry and wet granules)		5. Preparation of powders mass for capsules filling	
9. Procedures of tablets manufacturing (direct compression, dry granulation, wet granulation)		6. Compounding of capsules	
10. Testing of tablets according to the official regulations		7. Testing of capsules according to official regulations	
11. Capsules (type, formulation)		8. Compounding of suppositories for rectal use (Rectalia)	
12. Production/compounding of capsules (hard and soft)		9. Testing of suppositories for rectal use acording to the officila regulations	
13. Testing of capsules according to the official regulations		10. Compounding of suppositories for vaginal use (Vaginalia)	
14. Primary packing for powders, tablets and capsules (types, testing of security)		11. Testing of vaginal suppository acording to the officila regulations	
15. Suppositories (rectalia and vaginalia) - definition and general concepts			
Literature			
<i>Compulsory</i>			
1. Troy D, editor. Remington: The Science and Practice of Pharmacy. 21 st ed. Lippincott Williams & Wilkins, Philadelphia, 2005.			
2. Allen L, Popovich N, Ansel H, editors. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 9 th ed. Lippincott Williams & Wilkins, Philadelphia, 2010.			
3. European Pharmacopoeia, 8 th ed. European Directorate for the Quality of Medicines & Healthcare (EDQM), Council of Europe, Strasbourg, France, 2013. [e-book]			
4. Sweetman SC, editor. Martindale: The Complete Drug Reference. 36 th ed. Pharmaceutical Press, London, 2009. [e-book]			
5. Handouts of lecture presentations			
<i>Additional</i>			
1. Swarbrick J, Boylan JC. Encyclopedia of Pharmaceutical Technology Marcel Dekker Inc. New York, Basel, 2007			
Number of active classes			Other:
Lectures: 45	Practice: 60	Other types of teaching:	Research related activities:
Teaching methods: oral lectures, interactive classes, practical classes, laboratory work			
Student activity assessment (maximally 100 points)			
Pre-exam activities	points	Final exam	points
Lectures	10	Written	50
Practices	10		
Colloquium	30		
Essay			