

<b>Study program:</b> Integrated academic studies of Pharmacy			
<b>Type and level of the study program:</b> integrated academic studies			
<b>Course title:</b> PHARMACEUTICAL TECHNOLOGY II (PhIV-PTECHII)			
<b>Teacher:</b> Svetlana S. Goločorbin-Kon, Mladena N. Lalić-Popović, Veljko S. Krstonošić, Zoran P. Zeković			
<b>Course status:</b> compulsory			
<b>ECTS Credits:</b> 6			
<b>Condition:</b> Pharmaceutical technology I			
<b>Course aim</b> Introduction to basic principles of pharmaceutical technological compounding of different pharmaceutical formulations for the external and internal application like: solution, extracts, suspensions and emulsions.			
<b>Expected outcome of the course:</b> Pharmacy students will acquire knowledge and skills for the compounding of pharmaceutical formulations for external and internal application, solution, extracts, suspensions and emulsions and their quality control, proper packing, labeling and storage.			
<b>Course description</b> <i>Theoretical education</i>		<i>Practical education: exercises, other forms of education, research related activities</i>	
1. Defining of types, role and importance of liquid medicinal forms	2. Solutions (definition, classification)	3. Formulation and production of various types of solution	4. The solvents and substances affecting the solubility
5. Liquid pharmaceutical formulations for oral, nasal and auricular therapy	6. Liquid pharmaceutical formulations and technology for internal and external use	7. Pharmaceutical testing of solutions for internal and external use	8. Extractive preparation (definition and types)
9. Extraction methods according to the official regulations	10. Methods for extraction - solvents for extraction	11. Testing of extractive preparations according to official regulations	12. Formulation and production of various types of suspensions
13. The stability of suspensions	14. Formulation and production of various types of emulsions	15. Emulsifiers - types and features	16. The stability of emulsions
17. Examination of suspensions and emulsions according to official regulations			
1. Compounding of pharmaceutical formulation of solution for internal use of different API concentration	2. Production of pharmaceutical formulation of solution for external use that are common in magistral prescription	3. Compounding of pharmaceutical formulation of solution used for oral, nasal and auricular therapy	4. Compounding of pharmaceutical formulation of solution for internal use and age appropriate dose adjustment
5. Compounding of extractive preparations by maceration according to official regulations	6. Compounding of extractive preparations by infusion according to official regulations	7. Compounding of extractive preparations by decoction according to official regulations	8. Compounding of tinctures extractive preparations according to official regulations
9. Compounding of tea extractive preparations according to official regulations	10. Compounding and testing of pharmaceutical suspension formulations for external use	11. Compounding and testing of pharmaceutical suspension formulation for internal use	12. Compounding and testing of pharmaceutical emulsion formulations for external use
			13. Compounding and testing of pharmaceutical emulsion for internal use
<b>Literature</b> <i>Compulsory</i>			
1. Goločorbin-Kon S, Lalić-Popović M. Practicals in Pharmaceutical Technology: Liquid and Semisolid Preparations. Ortomedics, Novi Sad, 2014.			
2. Troy D, editor. Remington: The Science and Practice of Pharmacy. 21st ed. Lippincott Williams & Wilkins, Philadelphia, 2005.			
3. Allen L, Popovich N, Ansel H, editors. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 9th ed. Lippincott Williams & Wilkins, Philadelphia, 2010.			
4. European Pharmacopoeia, 8th ed. European Directorate for the Quality of Medicines & Healthcare (EDQM), Council of Europe, Strasbourg, France, 2013. [e-book]			
5. Sweetman SC, editor. Martindale: The Complete Drug Reference. 36th ed. Pharmaceutical Press, London, 2009. [e-book]			
6. Handouts of lecture presentations			
<i>Additional</i>			
1. Swarbrick J., Boylan J.C., Encyclopedia of Pharmaceutical Technology Marcel Dekker Inc. New York, Basel, 2007			
<b>Number of active classes</b>			Other:
Lectures: 45	Practice: 45	Other types of teaching:	
<b>Teaching methods:</b> oral lectures, interactive classes, practical classes, laboratory work			
<b>Student activity assessment (maximally 100 points)</b>			
<b>Pre-exam activities</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
Lectures	10	Written	50
Practices	10		
Colloquium	30		
Essay			