

1. COURSE DESCRIPTION – GENERAL INFORMATION			
1.1. Course teacher	Associate professor Marijana Zovko Končić	1.6. Year of study	3 rd
1.2. Name of the course	Pharmacognosy 2	1.7. Credit value (ECTS)	6
1.3. Associate teachers	Assistant professor Biljana Blažeković Maja Bival Štefan, MPharm Marija Kindl, MPhar	1.8. Type of instruction (number of hours L+E+S+e-learning)	30+30+15
1.4. Study programme (undergraduate, graduate, integrated)	Pharmacy integrated study programme	1.9. Expected enrolment in the course	130
1.5. Status of the course	Compulsory	1.10. Level of use of e-learning (1, 2, 3 level), percentage of instruction in the course on line (20% maximum)	2 nd
2. COURSE DESCRIPTION			
2.1. Course objectives	<p>Know the chemistry and activity of drugs of plant and animal origins as well as active ingredients in them.</p> <p>Understand the use and chemical constituents of drugs of plant and animal origin.</p> <p>Acquire integrative knowledge on the most important drugs of plant and animal origin according to their chemical characteristics.</p> <p>Distinguish drugs according to their morphological and micromorphological features.</p>		
2.2. Enrolment requirements and required entry competences for the course	The requirement for registration: attended Pharmacognosy 1		
2.3. Learning outcomes at the level of the study programme to which the course contributes	<ul style="list-style-type: none"> • Introduction to micromorphological, anatomical and chemical characteristics of herbal drugs important for control of their quality. • Applying expert knowledge and skills in advising patients on the medical effects of herbal drugs. 		
2.4. Expected learning outcomes at the level of the course (4-10 learning outcomes)	<p>After passing the course the student will be able to:</p> <ol style="list-style-type: none"> 1. Recognise herbal drugs based on their morphological, histochemical and micromorphological features; 2. Distinguish herbal drugs according to their chemical composition; 3. Recognize herbal drugs according to their use and purpose; 4. Explain the mechanism of therapeutic action of herbal drugs from the main phytochemical groups. 		

2.5. Course content broken down in detail by weekly class schedule (syllabus)

LECTURES:

- Introduction to pharmacognosy and analysis of herbal drugs
- Drugs with inorganic active principles
- Drugs with carbohydrates (monosaccharides, disaccharides, polysaccharides)
- Drugs with organic acids
- Drugs with fats, oils and waxes
- Drugs with essential oil
- Drugs with phenolic glycosides
- Drugs with tannins
- Drugs with coumarins
- Drugs with flavonoids
- Drugs with thioglycosides
- Drugs with polysulfides
- Drugs with cardiac glycosides
- Drugs with anthracene derivatives
- Drugs with saponins
- Drugs with alkaloids
- Drugs with lignans
- Drugs with iridoids

SEMINARS:

- Introduction to microscopic and morphologic analysis of herbal drugs
- Samples, preparations and marketed products of drugs with inorganic active principles
- Samples, preparations and marketed products of drugs with carbohydrates (monosaccharides, disaccharides, polysaccharides)
- Samples, preparations and marketed products of drugs with essential oil
- Samples, preparations and marketed products of drugs with phenolic glycosides, flavonoids and coumarins
- Samples, preparations and marketed products of drugs with saponins
- Samples of drugs with cardiac glycosides
- Samples, preparations and marketed products of drugs with tannins and anthracene derivatives
- Samples, preparations and marketed products of drugs with alkaloids
- Samples, preparations and marketed products of drugs with iridoids and lignans

EXERCISES:

- Morphological and micromorphological identification of herbal drugs in pharmacognosy
- Morphological and micromorphological identification of herbal drugs: leaves and flowers
- Morphological and micromorphological identification of herbal drugs: herbs and barks
- Morphological and micromorphological identification of herbal drugs: rhizomes and roots
- Morphological and micromorphological identification of herbal drugs: fruits and seeds
- Histochemical reactions
- Analysis of tea mixture

2.6. Type of instruction	lectures seminars and workshops exercises online in entirety mixed e-learning field work		independent study multimedia and the internet laboratory work with the mentor (other)		2.7. Comments:	
2.8. Student responsibilities						
2.9. Screening of student's work (specify the proportion of ECTS credits for each activity)	Class attendance	1	Research		Practical training	
	Experimental work	0.5	Report			
	Essay		Seminar essay		(Other--describe)	
	Tests	0.5	Oral exam	2	(Other—describe)	
	Written exam	2	Project		(Other—describe)	
2.10. Grading and evaluation of student work over the course of instruction and at a final exam	Test after excersizes, partial exams during semester, written exam, oral exam.					
2.11. Required literature (available at the library and via other media)	Title					
	Lectures and materials for exercises are available at e-learning platform, Merlin					
	Danica Kuštrak, Farmakognozija, fitofarmacija, izdanje 1., Golden Marketing, Tehnička knjiga, Zagreb, 2005.					
2.12. Optional literature	1. Rudolf Hansel, Otto Sticher, Rudolf H. Nsel, Pharmakognosie - Phytopharmazie 9th ed, Springer-Lehrbuch, 2009 2. Gunnar Samuelson, Drugs of Natural Origin, A Textbook of Pharmacognosy, %th Ed., Apotekarsocieteten, 2004					
2.13. Methods of monitoring quality that ensure acquisition of exit competences	Outcomes 2-4 are checked by partial exams, wrien and oral exam, while the outcome 1 is checked by a test after exercise.					