

<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> CHEMISTRY OF PSYCHOACTIVE SUBSTANCES (PhIV-PSYCHS)				
<b>Teacher:</b> Nataša B. Milić, Otto F. Barak, Igor S. Veselinović, Vesna S. Turkulov				
<b>Course status:</b> elective				
<b>ECTS Credits:</b> 3				
<b>Condition:</b> /				
<b>Course aim</b> Training and learning for future pharmacists: to be part of the team (social and health segment), which deals with the treatment of persons under the influence of psychoactive substances, to propose antidote therapy or other therapy, to understand ethical and professional guidelines about the contact with those patients, to become familiar with good laboratory practice				
<b>Expected outcome of the course:</b> Theoretical - the link between biological activity and chemical structure, chemical synthesis, pharmacological properties, mechanisms of action, pharmacodynamic properties, tolerance, addiction, abuse, toxicity, interactions of psychoactive substances. To select the proper sample for toxicological analysis, to receive, prepare, analyze the sample, correctly interprets the results and issue reports.				
<b>Course description</b>				
<i>Theoretical education</i>				
1. Historical review				
2. Drugs and Society (types of addition , epidemiological data, prevention and regulation)				
3. Classification of psychoactive substances				
4. Serotonin receptors, opioid receptors , nicotinic receptors , GABA - receptors , cannabinoid receptors				
5. Chemical structure of the compounds , methods of ingestion, distribution in the body, metabolism and elimination, mechanism of toxicity, case studies, the dependence on chemical structure – pharmacological				
6. CNS depressants : alcohol, barbiturates, opiates - morphine, heroin, codeine				
7. CNS stimulants : caffeine, cocaine group (cocaine, crack), amphetamine group (amphetamine, methamphetamine, ecstasy), smart drugs				
8. Hallucinogens: LSD, psilocybin, phencyclidine (PSP), mescaline				
9. CNS depressants -hallucinogens: marijuana, hashish, organic solvents				
10. Nicotine				
11. Drugs of abuse: anabolics, analgesics, anxiolytics (e.g., clonazepam), antidepressants (e.g., fluoxetine - Prozac, maprotiline, sedatives (e.g. Gamma hydroxy butyrate - GBH, hypnotics, antihypnotics, anesthetics (e.g., ketamine), anticonvulsants, antiepileptics (e.g., carbamazepine), antiparkinsonian (eg. artan (trihexyphenidyl), methadone, tramadol (opioid replacement therapy), methyl phenylate-ritalin, clozapine (psychostimulants), benzodiazepines (diazepam, midazolam, clonazepam, etc.)				
<i>Practical education: exercises, other forms of education, research related activities</i>				
1. Visits to institutions that deal with this issue from different angles or visit of colleagues from professional institutions				
2. Labs - Analytics (selecting the right sample, the detection and measurement of toxins / metabolites in biological samples)				
<b>Literature</b>				
<i>Compulsory</i>				
1. Cole MD. The Analysis of Controlled Substances. John Wiley & Sons Ltd, 2003.				
2. Rapaka RS, Sadée W, editors. Drug Addiction From Basic Research to Therapy. Springer, 2003.				
<i>Additional</i>				
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<b>Number of active classes</b>				Other:
Lectures: 30	Practice: 15	Other types of teaching:	Research related activities:	
<b>Teaching methods</b> Lectures, Power point presentations, seminars, experiments, visits to institutions				
<b>Student activity assessment (maximally 100 points)</b>				
<b>Pre-exam activities</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>	
Lectures		Written	45	
Practices	15	Oral		
Colloquium	25	.....		
Essay	15			