



Study program: Integrated Academic Studies in Pharmacy
Course title: Toxicological Chemistry
Teacher: Velibor M. Vasović, Branislava U. Srđenović Čonić
Course status: compulsory
ECTS Credits: 8
Condition: Basic toxicology
<p>Course aim</p> <p>The toxicological chemistry course is intended to provide students a basic knowledge of the analysis of poisons, toxic agents derived from different sources, regulatory toxicology and interpretation of analytical results.</p>
<p>Expected outcome of the course:</p> <p>Students will gain knowledge of the basic characteristics of different poisons, mechanisms of toxicity, their toxicodynamic and toxicokinetic properties, poison prevention and treatment, analysis and interpretation of analytical results, as well as handling different biological samples. Students will be able to use gained knowledge in the following areas: analytical toxicology of different xenobiotics, diagnostic and prevention of poisoning, regulatory toxicology.</p>
<p>Course description</p> <p><i>Theoretical education</i></p> <ol style="list-style-type: none"> 1. Application of analytical toxicology in different fields of toxicology 2. Basic approaches in analysis of poisons – sampling, preparation, extraction, sample types, choice of analytical methods 3. Gaseous poisons 4. Volatile poisons 5. Mineral poisons 6. Mineral poisons that are being investigated without destruction of organic materials 7. Herbal poisons 8. Animal poisons 9. Synthetic poisons 10. Basics of ecotoxicology- the most important pollutants of atmosphere, hydrosphere and soil 11. Legislation and interpretation of toxicological results 12. Regulatory toxicology 13. Drug analysis from different biological samples <p><i>Practical education</i></p> <p>Introductory lecture - introduction to the work in the laboratory and risk assessment</p> <ol style="list-style-type: none"> 1. Determination of ammonia in air 2. Determination of hydrogen sulfide in air 3. Determination of nitric oxide in workplace 4. Determination of aromatic hydrocarbons in air 5. Determination of carboxyhemoglobin in blood 6. Determination of methemoglobin in blood 7. Determination of ethanol in blood by Widmark 8. Determination of methanol in alcoholic beverages 9. Determination of iron in urine 10. Determination of PCBs in soil 11. Determination of fluoride in water/urine 12. Determination of hippuric acid in urine 13. Determination of thiocyanate in urine 14. Determination of lead in urine 15. Determination of delta aminolevulinic acid in the urine 16. Determination of coproporphyrin and uroporphyrin in urine 17. Determination of serum acetylcholinesterase 18. Determination of serum butyrylcholinesterase

Literature*Compulsory*

1. Flanagan R, Taylor A, Watson I, Whelpton R. Fundamentals of Analytical Toxicology. Chichester: John Wiley & Sons, Ltd; 2007.
2. Klaassen CD. Casarett & Doull's Toxicology: The Basic Science of Poisons. 6th ed. US: McGraw-Hill; 2001.
3. T True BL, Dreisbach RH. Dreisbach's Handbook of Poisoning: Prevention, Diagnosis and Treatment. 13th ed. New York: Taylor & Francis; 2001.

Number of active classes**Theoretical classes: 45****Practical classes: 60****Teaching methods:** lectures; practical classes – poison sampling, isolation, purification, analysis and interpretation of obtained results; writing seminar paper**Student activity assessment** (maximally 100 points)

Pre-exam activities	points	Final exam	points
Lectures	5	Written	60
Practices		Oral	
Colloquium	30	
Essay	5		