## **Course description**

General information about the course		
1. Major of study: Pharmacy	2. Study level: Master's degree	
	3. Form of study: full-study	
4. Year: IV	5. Semester: VIII	
6. Course name: Toxicology		
7. Course status: compulsory		

**8. Name of Department, mailing address, e-mail:** Department of Toxicology and Bioanalysis, 41-200 Sosnowiec, Ostrogorska str. 30, +48 32 3641631, <a href="http://biotoks.sum.edu.pl/">http://biotoks.sum.edu.pl/</a>

## 9. Course contents:

Students learn the concepts of toxicology, metabolism and mechanisms of toxicity of xenobiotics. Learn methods of toxicological analysis and are able to interpret the obtained results of analysis

10 Number of hours for the course	90
11. Number of ECTS points for the course	5
12. Forms and topics of classes	Number
12.1 Lectures:	of hours:
<ul> <li>Introduction to toxicology, history, basic concepts</li> </ul>	30h
<ul> <li>Disposition of xenobiotic – absorption, distribution, excrection and</li> </ul>	
biotransformation	
<ul> <li>Factors affecting toxic responses</li> </ul>	
<ul> <li>Mechanism of toxicity</li> </ul>	
Xenobiotic interactions	
<ul><li>Toxicity assessment</li></ul>	
<ul> <li>Principles of treatment of poisoning</li> </ul>	
<ul> <li>Toxicity of the drugs</li> </ul>	
<ul> <li>Toxicity of the elements</li> </ul>	
Toxicity of food additives	15h
12.2 Seminar:	1511
<ul><li>Toxicological analysis</li></ul>	
<ul> <li>Digestion procedure</li> </ul>	
Toxicity of benzene	
<ul> <li>Toxicity of metals – nickel, cadmium, mercury</li> </ul>	
<ul> <li>Toxicity of barbiturate</li> </ul>	
<ul> <li>Toxicity of salicylate</li> </ul>	
<ul> <li>Toxicity of methanol and ethylene glycol</li> </ul>	
<ul> <li>Toxicity of ethanol</li> </ul>	
<ul> <li>Occupational toxicology</li> </ul>	
<ul><li>Biomarkers</li></ul>	
– Pesticide	
<ul> <li>Environmental toxicology</li> </ul>	
12.3 Laboratory classes:	45h
<ul> <li>Dry and wet digestion</li> </ul>	
<ul> <li>Determination of phenol in urine as a biomarker of exposure to benzene</li> </ul>	
Determination of methanol in urine	
Determination of salicylates in urine	
<ul> <li>Determination of phenobarbital in blood by Lubran's</li> </ul>	

- Determination of cyanide in urine
- Determination of ethylene glycol in urine
- Quantitative determination of aminolevulinic acid (ALA) in urine as an indicator of exposure to lead
- Determination of ammonia in the air
- Evaluation of exposure to organophosphorus compounds on the example content of p-aminophenol in urine

## 13. Readings

- Klaassen C.D., Watkins III J.B., Casarett and Doull Essentials of Toxicology. 3ed. 2015, The McGraw-Hill Companies
- Gunnar F. Nordberg, Bruce A. Fowler, Monica Nordberg, Lars T. Friberg (Editor), Handbook on the Toxicology of Metals, 3rd ed., 2009Elsevier Science Publishing Co inc

## 14. Detail evaluation criteria

In accordance with the recommendations of the inspection bodies Completion of the course – student has achieved the assumed learning outcomes Detail criteria for completion and evaluation of the course are specified in the course regulations