

Course title Fizykochemiczne metody badań w kryminalistyce / Physicochemical methods of research in forensics science		ECTS code 13.3.0464
Name of unit administrating study Faculty of Chemistry		
Studies		
Field of study	Type	Form
Chemistry	Bachelor	Full-time studies
Teaching staff prof. UG, prof. dr hab. inż. Tadeusz Ossowski; dr Paweł Niedziałkowski; dr Alan Puckowski; prof. UG, dr hab. Aleksandra Dąbrowska; prof. UG, dr hab. Karol Krzymiński Dąbrowska		
Forms of classes, the realization and number of hours Lecture, Laboratory exercises		ECTS credits 4
A. Forms of classes, in accordance with the UG Rector's regulations lecture, laboratory		classes - 60 h
B. The realization of activities classes in the didactic room		tutorial classes – 5 h
C. Number of hours 30 h lecture, 30 h laboratory class		student's own work – 35 h
		Total: 100 h - 4 ECTS
The academic cycle 2021/22 winter semester		
Type of course obligatory	Language of instruction Polish	
Teaching methods <ul style="list-style-type: none"> Performing experiments Lecture with multimedia presentation 	Form and method of assessment and basic criteria for evaluation or examination requirements	
	A. Final evaluation, in accordance with the UG study regulations course completion (with a grade)	
	B. Assessment methods <ul style="list-style-type: none"> Written test exam. The final grade will be determinated on the basis of partial assessments received during the semester. Methods of execution of the final work - research and presentation of obtained results. Colloquium. 	
	C. The basic criteria for evaluation or exam requirements Lecture: <ul style="list-style-type: none"> - Positive mark will be possible after reaching 51% of the maximum number of points from exam. - a negative mark can be improvement on the basis of an additional written exam - material from lectures and laboratory (at least 51% of points will be possible) 	
	Laboratory: The mark from the laboratory will be consist of partial marks from two thematic blocks. The first part (60%): The mark from laboratory will be weighted average of the final colloquium grades from all of the exercise material laboratory (50%), 3 partial tests of laboratory (35%) and 3 reports (15%). Negative final rmark can be improved based on an additional colloquium of material covering the whole range of exercises (at least 51% possible points). The mark of the second part (40%) is consists of the assessment from reports (70%) and efficiency and effectiveness in performing laboratory tasks (30%).	

Required courses and introductory requirements

Completed course in general chemistry, analytical chemistry and organic chemistry.

Aims of education

- Getting acquainted with the basic terms and definitions in forensic science,
- Getting acquainted with the basic physicochemical methods used in forensic science,
- Getting acquainted with the basic chemical methods used in forensic science,
- Getting acquainted with the basic analyzes and methods of revealing forensic traces,
- The develop of ability to carry out the basic activities related with evealing and securing of forensic traces

Course contents

Forensics Science - the basic concepts, scope of research.

Inspection. Forensic physicochemistry - general concepts. Research methodology used in forensic science, classical qualitative analysis, chromatographic methods (TLC, GC, HPLC), spectrophotometry (IR, UV VIS, MAS, NMR, INR), electrochemistry (CV, electrography, etc.), microscopic examination.

The scope of chemical research in forensics science, research of fuel, research of alcohol, research of psychoactive drugs, drug research, determination of causes of fires, explosions, examination of paint coatings, microscopic tests, testing of gunshot residues, testing of metals and their alloys, testing of cosmetics, testing of chemicals used in the household.

Dactyloscopic and dermatoscopic traces, osmology, basic concepts, methods of protection traces. Analysis of phonoscopic traces. Mechanical and traseological traces.

Forensic analysis of the writing and its pathology. Documentation as a forensic trace. Regulations, routines and legal aspects in forensic science and analytical practice.

Laboratory

Laboratory were divided into two thematic blocks.

The first part is consists of a qualitative and quantitative analysis in forensic science using chromatographic and spectroscopic techniques such as: gas chromatography, thin layer chromatography, spectroscopy UV / Vis methods.

The second part of laboratory includes practical learning of revealing fingerprints with mechanical and physicochemical methods and the basics of learning to identify a human on the basis of fingerprints on fingerprint cards and exercises in the field traseologii.

Bibliography of literature

A. Literature required to pass the course

1. Z. Ruszkowski, Fizykochemia kryminalistyczna, CLK KGP, Warszawa 1992
2. J. Moszczyński, Ślady w kryminalistyce, Difin, Warszawa 2007.
3. J. Mazepa, Vademecum techniki kryminalistyki, Oficyna, Warszawa 2009.
4. B. Hołdys, Kryminalistyka, Lexis Nexis, Warszawa 2006.
5. M. Małkiewicz, Kryminalistyczne badanie patologii pisma ręcznego, Wydawnictwo Akademickie i Profesjonalne, Warszawa 2009
6. J. Moszczyński, Daktyloskopia, CLK KGP, Warszawa 1997
7. Stepnowski P., Synak E., Szafranek B., Kaczyński Z. Techniki separacyjne. Wydawnictwo UG 2010
8. A. Mazurek, Badania mineralogiczne śladów kryminalistycznych, CLK KGP, Zeszyty Metodyczne nr 6, Warszawa 2000
9. Stepnowski P., Synak E., Szafranek B., Kaczyński Z. Techniki separacyjne. Wydawnictwo UG 2010

B. Extracurricular readings

1. R. Zieliński, Badania instalacji elektrycznej na miejscu pożaru, CLK KGP, Warszawa 1992
2. L. Rodowicz, Kryminalistyczne badanie śladów obuwia, CLK KGP, Warszawa 2000

Knowledge

1. Defines the basic principles of visual inspection of occurrence.
2. Defines and classifies the rules of marking and securing the crime scenes.
3. Explains the principles of sample preparation for physicochemical analysis in forensic science.
4. Explains and recognizes the basic analytical procedures and methods in forensic science.
5. Recalls the basic principles and legal procedures in forensic science.
6. Describes the principle of classical analytical methods for analysis in forensic science.

Skills

1. Manually identifies and analyzes of forensic traces.
2. Performs chromatographic determinations of selected forensic traces.
3. Identifies the fingerprint.
4. Distinguishes and identifies the traseologic traces.
5. Preparation of performed experiments in English.

Social competence

1. Understands the need for further education to acquire specialist qualifications.
2. Anticipates the effects of the use of psychoactive drugs and narcotic drugs.
3. Identifies the hazards associated with the use of chemical substances in household.
4. Behaves caution in handling with chemicals and explosives.