KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Physiochemical detection methods in forensic science	13.3.0464

Name of unit administrating study

Faculty of Chemistry

Studies

faculty	field of study		
Wydział Chemii	Chemia	type	pierwszego stopnia
		form	stacjonarne
		specialty	chemia biomedyczna
		specialization	wszystkie

Teaching staff

dr Paweł Niedziałkowski; prof. dr hab. inż. Tadeusz Ossowski; dr Hanna Lis; dr hab. Łukasz Haliński; mgr Klaudia Godlewska; dr Alan Puckowski; dr Paulina Łukaszewicz

Forms of classes, the realization and number of hours

Forms of classes

Laboratory classes, Lecture

The realization of activities

classroom instruction

Number of hours

Lecture: 30 hours, Laboratory classes: 30 hours

ECTS credits

4
classes - 60 h
tutorial classes – 5 h
student's own work – 35 h

Total: 100 h - 4 ECTS

The academic cycle

2024/2025 winter semester

Type of course

obligatory

Language of instruction

polish

Teaching methods

- conducting experiments
- multimedia-based lecture

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

- ssignment work – conducting research and presenting results
- (mid-term / end-term) test
- written exam (test)
- graded course credit based on individual grades obtained during the semester

The basic criteria for evaluation

Lecture:
- 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%).

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

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

B. Prerequisites

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

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

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

The learning outcomes (for the field of study and specialization)

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.

Contact

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