KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI
FUNDUSZ SPOŁECZNY

Course title	ECTS code
Contemporary aspects of laboratory diagnostics in forensic medicine (seminar)	12.0.0537

Name of unit administrating study

Intercollegiate Faculty of Biotechnology UG-MUG

Studies

faculty	field of study		
Intercollegiate Faculty of Biotechnology UG-MUG	Biotechnology	type	second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all

Teaching staff

dr hab. Krzysztof Rębała; prof. dr hab. Ryszard Pawłowski; dr Marek Wiergowski

Forms of classes, the realization and number of hours

Forms of classes

Proseminar

The realization of activities

classroom instruction

Number of hours

Proseminar: 30 hours

ECTS credits

2

The academic cycle

2021/2022 winter semester

Type of course

an elective course

Language of instruction

polish

Teaching methods

- critical incident (case) analysis
- group work
- multimedia-based lecture
- problem solving
- problem-focused lecture

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

Final evaluation

Graded credit

Assessment methods

- written exam with open questions
- written exam (test)
- written exam (long written answer/problem solving)

The basic criteria for evaluation

Learning outcomes in the form of knowledge and skills will be verified by closed and open tasks. The assessment of these effects will be also influenced by correct answers to questions asked to students during the seminars.
Assessment covers contents contained in the box 'Course Contents'.
The grade will be based on the questions checking:
• Knowledge and understanding of biochemical and genetic phenomena that have practical application in laboratory diagnostics in forensic medicine;
• Deepened knowledge about the methods of detection and quantification of psychoactive substances and drugs in biological material, identification of biological traces, human identification and kinship analysis, including paternity testing;
• Knowledge and understanding of the basic notions and terminology appropriate for forensic toxicology and genetics;
• Ability to analyze toxicological and genetic results in forensic practice and prepare expertises for judicial and enforcement authorities.
Learning outcomes in the form of social competences (attitudes) will be verified by essay questions. The assessment of these effects will be also influenced by regular, timely and active participation in the classes.

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

-

B. Prerequisites

Biochemistry, Genetics, Molecular Biology

Aims of education

During the course, the student will:
K_W01 – get to know and understand biochemical and genetic phenomena that have practical application in laboratory diagnostics in forensic medicine, get to know their significance in toxicological and genetic examinations for judicial and enforcement authorities;
K_W02 – acquire deepened knowledge in the area of methods of detection and quantification of psychoactive substances and drugs in biological material, identification of biological traces, human identification and kinship testing, including paternity testing;
K_U06 – get to know scientific language, including specialized terminology and notional apparatus appropriate for forensic toxicology, genetics and related disciplines used in forensic practice;
K_K01 – acquire awareness of constant need to enhance and update knowledge, and raise qualifications in laboratory work in the area of forensic toxicology and genetics;
K_K03 – acquire an ability to effectively plan work connected with studies in the field of laboratory diagnostics in forensic medicine.

Course contents

The course covers issues concerning contemporary laboratory methods in forensic medicine, and in particular:
• Basic issues concerning forensic toxicology, among others the notion of poison, reference therapeutic, toxic and lethal concentrations;
• Basic techniques of toxicological analysis;
• Knowledge concerning the most frequent accidental, suicidal and criminal poisonings;
• Problems concerning psychoactive substances encountered in the past and nowadays, including designer drugs and psychoactive substances of new generation;
• Legal conditions concerning the use of stimulants (alcohol, narcotics);
• Issues connected with substitutes for ethanol (methanol, isopropanol, ethylene glycol);
• Retrospective and prospective calculation of alcohol concentration level in blood;
• Procedures used in identification of biological traces (among others, with the use of tests detecting blood stains, semen, saliva, epidermis and epithelium, and tests confirming presence of various biological substances, including mRNA profiling);
• DNA profiling (restriction fragment analysis, multiplex PCR reaction, polymorphism of STR markers localized on autosomes and sex chromosomes, mitochondrial DNA profiling);
• Genetic identification of sex and markers of human appearance (eye color, facial look, age of an individual);
• Stages of DNA examination in identification of an individual and in paternity testing;
• Biostatistical calculations in forensic genetics and their significance in forensic expertises;
• Examples of application of DNA analysis in forensic genetics.

Bibliography of literature

1. S. Raszeja, W. Nasiłowski, J. Makarewicz, Medycyna sądowa, Podręcznik dla studentów, PZWL, Warszawa 1990.
2. Z. Szczerkowska, Badania biologiczne w sądowym ustalaniu ojcowstwa, Instytut Ekspertyz Sądowych, Kraków 1998.
3. Z. Szczerkowska, R. Pawłowski, Podstawy genetyki sądowej, Akademia Medyczna w Gdańsku, Gdańsk 2002.
4. R. Pawłowski, T. Kupiec, W. Branicki, Ekspertyza genetyczna, str. 339-379. W: Ekspertyza sądowa, red. J. Wójcikiewicz, Wyd. Zakamycze, Kraków 2002.
5. P. Kozioł, Analiza DNA w medycynie sądowej, str. 349-374. W: Biologia molekularna w medycynie, red. J. Bal, Wydawnictwo Naukowe PWN, Warszawa 2011.
6. Z. Marek, M. Kłys, Opiniowanie sądowo-lekarskie i toksykologiczne, Kantor Wydawniczy Zakamycze, Kraków 1998.
7. W. Seńczuk (red.), Toksykologia współczesna, PZWL, Warszawa 2006.
8. J. K. Piotrowski (red.), Podstawy toksykologii, WNT, Warszawa 2008.

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

K_W01
K_W02
K_U06
K_K01
K_K03

Knowledge

K_W01 - Understands complex biological phenomena on the molecular level, knows their significance for biotechnology and their relationships with other areas and disciplines of science
K_W02 - Possesses deepened knowledge in the field of related scientific areas and disciplines, allowing him/her to see connections and dependencies in nature, in particular those essential for biotechnology

Skills

K_U06 - Uses scientific language, including specialist terminology and notional apparatus proper for biotechnology and related areas and disciplines

	Social competence K_K01 - Knows limitations of his/her knowledge, is willing to constantly upgrade and update his/her knowledge and raise qualifications within the field of biotechnology and related scientific areas and disciplines K_K03 - Effectively plans his/her work, professional career, organizes his/her own work, in particular work in the laboratory and work concerning studies in the field of biotechnology and related scientific areas and disciplines

Contact

k.rebala@gumed.edu.pl