Course title

Contemporary aspects of laboratory diagnostics in forensic medicine (seminar)

ECTS code

12.0.0058

Name of unit administrating study

Intercollegiate Faculty of Biotechnology UG-MUG

Teaching staff

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

Studies

faculty	field of study	type	form	specialty	specialization	semester
Intercollegiate Faculty of Biotechnology UG-MUG	Biotechnology	second tier studies (MA)	full-time	all	all	1

Forms of classes, the realization and number of hours

Forms of classes

Seminarium (to translate)

The realization of activities

lectures in the classroom

Number of hours

Seminarium (to translate): 30 hours

ECTS credits

2

The academic cycle

2013/2014 winter semester

Type of course

elective (to translate)

Language of instruction

polish

Teaching methods

- wykład problemowy (to translate)
- wykład z prezentacją multimedialną (to translate)
- ćwiczenia audytoryjne - analiza zdarzeń krytycznych (przypadków) (to translate)
- ćwiczenia audytoryjne - praca w grupach (to translate)
- ćwiczenia audytoryjne - rozwiązywanie zadań (to translate)

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

Final evaluation

Zaliczenie na ocenę (to translate)

Assessment methods

- egzamin pisemny testowy (to translate)
- egzamin pisemny z pytaniami (zadaniami) otwartymi (to translate)

The basic criteria for evaluation

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 determination of psychoactive substances and medicines in biological material, identification of biological traces and genetic identification of an individual and establishing kinship, including paternity;
• Knowledge and understanding of the basic notions and terminology appropriate for toxicology and forensic genetics;
• Ability to analyze toxicological and genetic results in forensic-medical practice and formulate opinions for law enforcement bodies and investigative authorities.

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 law enforcement bodies and investigative authorities.
K_W02 – acquire a deepened knowledge in the area of methods of detection and determination of psychoactive substances and medicines in biological material, identification of biological traces and genetic identification of an individual and establishing kinship, including paternity;
K_U06 – get to know scientific language, including specialized terminology and notional apparatus appropriate for toxicology and forensic genetics and related disciplines used in medical - forensic practice
K_K01 – acquire the awareness of constant need to enhance, update knowledge and raise qualifications in laboratory work in the area of toxicology and forensic genetics
K_K03 – acquire an ability to effectively plan the work connected with reviews in the field of lab diagnostics in forensic medicine

Course contents

The course covers issues concerning contemporary lab 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 the so-called designer drugs and psychoactive substances of new generation;
• Legal conditions concerning the use of stimulants (alcohol, narcotics);
• Issues connected with substitutes for ethyl alcohol (methanol, izopropyl alcohol, ethylene glycol);
• Retrospective and prospective calculation of alcohol concentration level in blood;
• Procedures used in identification of biological traces (among others, using tests that detect blood stains, semen, saliva, epidermis and epithelium, tests that confirm the presence of various biological substances, including mRNA profiling);
• DNA profiling (restrictive analysis, complex 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 establishing paternity
• Biostatistical calculations in forensic genetics and their significance in forensic-medical opinion;
• Examples of applying DNA research 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. Z. Marek, M. Kłys, Opiniowanie sądowo-lekarskie i toksykologiczne, Kantor Wydawniczy Zakamycze, Kraków 1998.
6. W. Seńczuk (red.), Toksykologia współczesna, PZWL, Warszawa 2006.
7. J. K. Piotrowski (red.), Podstawy toksykologii, WNT, Warszawa 2008.

The learning outcomes

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 a deepened knowledge in the field of related scientific areas and disciplines allowing him 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 work, in particular in the lab or concerning reviews in the field of biotechnology and related scientific areas and disciplines

Contact

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