University of Gdańsk

Subject card

Subject name and code	Biological methods of investigating traces of crimes - laboratory classes, PG_00132634		
Field of study	Criminology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	Master's studies	Subject group	Optional subject group
Mode of study	part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Law and Administration -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Monika Badura	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	0.0	0.0	15

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	15	0.0	60.0	75

Subject objectives

Practical application of botany, acarology and forensic entomology in the context of trace analysis and estimation of time and circumstances of death. Familiarisation with methods of identification/individuation of biological material. Hands-on learning of molecular biology tools for identification of plant species and molecular methods for establishing individual identity, paternity and relationship.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[KRYMMU2_UW01] I able to apply theoretical knowledge of criminology and related disciplines to analyse and interpret problems in criminology in a broad sense	The student is able to use theoretical knowledge of criminology and related disciplines (including biology) to analyse and interpret problems related to criminology in a broad sense.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[KRYMMU2_K05] Is able to independently and critically complement knowledge and skills, extended by the interdisciplinary dimension	The student is able to acquire knowledge and skills in an independent and critical way, extended by an interdisciplinary dimension (including natural sciences).	[SK2] presentation/project/paper/ report [SK5] implementation of a problem task [SK8] observation of student's independent or team work
[KRYMMU2_UW05] Has the ability to independently propose solutions to a specific problem and carry out a procedure to reach a decision on it	The student is able to independently propose a solution to a specific problem and carry out a procedure to solve it.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work

Subject contents	Forensic acarology - application of mites in forensic science - cadaveric acarofauna and evidence in micro trace analysis. Methods of identification and preservation of mites. Forensic entomology - basic groups of insects relevant to attempts to reconstruct the date of death, entomological methods used in reconstructing the date of death of "fresh" cadavers - determination of larval development time under constant and varying temperature conditions, determination of age of larvae on the basis of their size, isomegalenic and isomorphic diagrams, values of thermal parameters governing insect development. Entomological methods used in the reconstruction of the date of death of bodies in an advanced stage of decomposition, as well as unburied, buried, hanged, burned, immersed corpses. Practical determination of the date of death on the basis of the above methods. Forensic botany - collection and preservation of material for botanical analysis from crime scenes and physical evidence. Use of palynology to determine the origin and movement routes of drugs and other illegally imported goods. Selected poisonous plants and their identification in various types of material. Collect plant samples for DNA analysis, isolate plant DNA, perform PCR reactions. DNA sequencing, carrying out PCR-STR. DNA sequencing and microsatellite DNA analysis. Forensic genetics - isolation of DNA from various types of biological material. DNA quantification by various methods including RT-PCR. Testing for Polymorphism of human DNA - RFLP and PCR techniques. Fluorescent detection of PCR products - capillary electrophoresis. DNA sequencing. DNA fragment length polymorphism (STR). DNA sequence polymorphism (SNP DNA). Y chromosome marker analysis - sexual harassment and rape cases. Investigation of disputed paternity and parentage of suspects. The problem of somatic mutations and transplants. Identification of a person's appearance through DNA testing. Interpretation of DNA profiles. Risks and sources of fundamental error in forensic genetic laboratory analysis (quality control).
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
forensic entomology - problem task	51.0%	20.0%
forensic acarology - problem task	51.0%	20.0%
human genetics - credit paper or report	51.0%	20.0%
forensic botany - credit paper or report	51.0%	20.0%
molecular identification of organisms - credit paper or report	51.0%	20.0%

Recommended reading

Basic literature

Amendt J., et al. 2009. Current conceptions in Forensic Entomology. Springer.

Boczek J., Błaszak C. 2005. Roztocze (Acari). Znaczenie w życiu i gospodarce człowieka. SGGW, Warszawa.

Coyle H.M. 2005. Forensic botany. Principles and applications to criminal casework. CRC Press LLC, Boca Raton, London, New York, Washington D.C.

Kaczorowska E., Draber-Mońko A. 2009. Wprowadzenie do entomologii sądowej. Wydawnictwo UG.

Młodziejowski B., Sołtyszewski I. 2007. Ślady biologiczne. [W:] Goc M., Moszczyński I. (red.). Ślady kryminalistyczne. Ujawnianie, zabezpieczanie, wykorzystanie. Centrum Doradztwa i Informacji Difin, Warszawa, pp.: 125-186.

Pawłowski R. 1997. Medyczno-sądowe badanie śladów biologicznych. Kraków Zakamycze.

Szczerkowska Z. 1998. Badania biologiczne w ustalaniu ojcostwa. Instytut Ekspertyz Sądowych, Kraków.

	Supplementary literature	Butler J. 2001. Forensic DNA typing. Academic Press. Hołyst B. 2007. Kryminalistyka. Wydawnictwo Prawnicze LexisNexis, Warszawa. Izdebska J.N., Jankowski Z. 2006. Demodex brevis and D. folliculorum (Demodecidae): specific human parasites. A comparative study of the effectiveness of diagnostic methods involving autopsy. [W:] Postępy Akarologii Polskiej, Gabryś G., Ignatowicz S. (red.). SGGW, Warszawa: 128- 136. Krantz, G., Walter D. 2008. Manual of Acarology. Texas A & M University Press. Perotti A. M., Lee Goff M., Baker A.S., Turner B.D., Braig H.R. Forensic acarology: an introduction. Experimental and Applied Acarology 49: 3-13. Piotrowski F. 1996. Stawonogi - sprzymierzeńcy i wrogowie człowieka. PWN, Warszawa. Smith K.G.V. 1986. A manual of forensic entomology. British Museum of Natural History, Cornell University Press, London. Żółtowski Z. (red.) 1976. Arachnoentomologia lekarska. PZWL, Warszawa.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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