University of Gdańsk

Subject card

Subject name and code	Biological methods of investigating traces of crimes - lecture, PG_00132810		
Field of study	Criminology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	Master's studies	Subject group	Optional subject group
Mode of study	full-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	exam
Conducting unit	Faculty of Law and Administration -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Monika Badura	
	Teachers	dr hab. Monika Badura prof. dr hab. Joanna Izdebska dr hab. Marcin Górniak dr Marcelina Malinowska dr Marta Zakrzewska	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Additional information:

successful completion of laboratory exercises and attendance of at least 80% of the lecture are required to take the exam

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	30	0.0	45.0	75

Subject objectives

To learn the basics of botany, acarology and forensic entomology in relation to trace analysis and estimation of time and circumstances of death. To be familiar with methods of identification/individuation of biological material. To be familiar with molecular biological tools for the identification of plant species and molecular methods for the determination of personal identity, paternity and relationship.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[KRYMMU2_KK01] The graduate is aware of the level of his/her knowledge and skills, and also understands the need of lifelong learning	is aware of his/her level of natural knowledge and skills and understands the need for lifelong learning	[SK4] test/exam - oral or written
[KRYMMU2_UW04] He/she can apply legal and professional principles and norms in taking up the activity of criminologist	in their work as criminologists, be able to apply legal and professional rules and standards	[SU1] oral statement/conversation/ discussion
[KRYMMU2_UU03] The graduate demonstrates deepened skills of observing, diagnosing, sensible assessing of complex psychological situations and analyzing motives and patterns of human behaviours	is able to observe, diagnose and rationally assess complex psychological situations and analyse motives and patterns of human behaviour	[SU1] oral statement/conversation/ discussion
[KRYMMU2_UW02] He/she acquires knowledge independently and develops his/her professional skills using various sources (in native and foreign language) and modern technologies	is able to acquire natural knowledge and develop his/her professional skills independently, using a variety of sources (mother and foreign language) and modern technologies	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[KRYMMU2_KR05] The graduate is ready to prepare and participate in the preparation of social projects taking into consideration legal, economic and political aspects, including the preparation and implementation of projects co-financed by the European Union's funds	is ready to undertake and participate in the preparation of social projects, taking into account legal, economic and political aspects, including the preparation and implementation of projects co-financed by the European Union.	[SK1] oral statement/conversation/ discussion
[KRYMMU2_KR08] He/ she is aware of the level of own knowledge and skills, and understands the need for lifelong learning	understands the need for lifelong learning and its aware of his/her level of knowledge and skills	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written
[KRYMMU2_UW07] He/she has skills in understanding and analyzing social phenomena and utilizing the analysis in professional work	is able to understand and analyse social phenomena and apply this analysis in his/her professional work	[SU1] oral statement/conversation/ discussion
[KRYMMU2_UK02] He/she is prepared for active participation in groups, organizations and institutions connected with the problem of crime and other related phenomena. He/she is also able to communicate with specialists and non-specialists in criminology	is prepared to participate actively in groups, organisations and institutions related to criminology in its broadest sense and is able to communicate with criminologists and non-criminologists alike	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[KRYMMU2_WG02] He/she demonstrates deepened knowledge about the character of natural sciences connected with the field of stud, their place in the system of sciences and mutual relations	has in-depth knowledge of the nature of natural sciences related to the studied major and their place in the system of sciences and mutual relations	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[KRYMMU2_UW06] He/she is able to propose solutions of concrete problems and carry out procedures connected with solutions in this respect	is able to propose solutions to a specific problem and problem and carry out a procedure to solve it	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written

Subject contents	Forensic acarology - Basics of acarology. Ecological forms of mites. Overview of the main groups of necrophagous mites, parasitic mites (especially living in human body tissues), allergenic, synanthropic and with high habitat specificity. Use of mites in forensic science - cadaver acarofauna and evidence in micro-trace analysis. Forensic entomology as a science. Urban entomology, stored products entomology and medical/forensic entomology (entomoscopy). Arthropods found on cadavers. Factors influencing the fauna of cadavers. Entomological methods used to reconstruct the time of death of 'fresh' cadavers and bodies in an advanced stage of decomposition. Insects found on Cannabis spp. and insects as causes of disease and death. Entomotoxicology. The use of DNA analysis in forensic entomology. Forensic botany - the place of botany in forensic science. Methods and aims of forensic botany. Theoretical and practical basis of analysis of pollen and macroscopic plant remains. The use of botanical methods to determine the nature of the crime scene and the link between the suspect and the crime scene. The use of the ecological properties of plants in determining the time of an incident. Secondary metabolites of plants as toxic substances. Plant and fungal species of pharmacopoeial importance: a review of selected species in the context of the action of the biologically active substances they contain (species characterisation, chemical properties, biological mechanisms of action, organismal responses). Review of plant species that are sources of drugs and stimulants. Symptoms of poisoning by plant and fungal toxins. Molecular biology in the identification of plant species.Forensic genetics - molecular methods used in attempts to establish personal identity, paternity and parentage. Molecular techniques used in phylogenetic and genealogical studies. Biochemical and molecular biological (mRNA) methods for identification of types of biological substances (blood, saliva, semen, hair, blood of pregnant women and newborns, menstrual blood, epithelia and epidermis, vomit, urine, faeces). Identification of species of traces by mitochondrial DNA polymorphism testing methods.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test (multiple choice, open questions)	51.0%	100.0%

Recommended reading

Basic literature

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

Błaszak C. (red.). 2011. Zoologia. T. 2, cz. 1 Stawonogi. Szczękoczułkopodobne, skorupiaki. PWN, Warszawa. Byrd J.H., Castner J.L. 2009. Forensic entomology. The utility of arthropods in legal investigations. Second edition. CRC Press,

Boca Raton, London, New York, Washington D.C. Connor J., Ferguson-Smith M. Podstawy genetyki medycznej. Warszawa, PZWL

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.

Gawęda-Walerych K., Sołtyszewski I. 2005. Zastosowanie analizy mitochondrialnego DNA w badaniach kryminalistycznych - perspektywy. Instytut Ekspertyz Sądowych w Krakowie, Kraków.

Izdebska J.N. 2005. Roztocze skórne człowieka i zwierząt domowych. [W:] Makowska-Wojciechowska B. (red.). Alergia na roztocze. Wyd. Mediton, Łódź, pp.: 95-105.

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	

Document generated electronically. Does not require a seal or signature.