University of Gdańsk

Subject card

Subject name and code	Biological methods of investigating traces of crimes - laboratory classes, PG_00132809		
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	2.0
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	dr hab. Monika Badura dr Natalia Olędrzyńska dr Karolina Cierocka dr Marcelina Malinowska dr Marta Zakrzewska	

Lesson types							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: - the course is strictly practical, with each student carrying out the tasks assigned to them individually - in order to obtain the final credit, all thematic panels must be passed						

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	20.0	50

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_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 knowledge and develop professional skills independently, using a variety of sources (mother and foreign language) and modern technologies	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU5] implementation of a problem task
[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, while being able to communicate with criminological and non-criminological specialists.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK3] text preparation/written work [SK5] implementation of a problem task [SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[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 [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[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 European Union funds.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK5] implementation of a problem task [SK8] observation of student's independent or team work
[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 is aware of his/her level of knowledge and skills	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK5] implementation of a problem task [SK8] observation of student's independent or team work
[KRYMMU2_UW04] He/she can apply legal and professional principles and norms in taking up the activity of criminologist	is able to use legal as well as professional principles and norms in the activities of a criminologist	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[KRYMMU2_KK01] The graduate is aware of the level of his/her knowledge and skills, and also understands the need of lifelong learning	understands the need for lifelong learning and is aware of his/her level of knowledge and skills	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK5] implementation of a problem task [SK8] observation of student's independent or team work
[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 [SU2] presentation/project/paper/ report [SU8] observation of student's independent or team work
[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 carry out a procedure to resolve it	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU5] implementation of a problem task [SU6] demonstration of practical skills [SU8] observation of student's independent or team work

	Course outcome	Subject outcome	Method of verification
	[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 an 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	[SW2] presentation/project/paper/ report [SW3] text preparation/written work [SW5] implementation of a problem task

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
human genetics - credit paper	51.0%	20.0%
molecular identification of organisms - project/credit paper or report	51.0%	20.0%
forensic entomology - problem task	51.0%	20.0%
forensic botany - credit paper or report	51.0%	20.0%
forensic acarology - problem task/ 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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