University of Gdańsk

Subject card

Subject name and code	Basics of population and conservation genetics, PG_00146891		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Agnieszka Kaczmarczyk-Ziemba	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	0.0	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	3.0	7.0	25

Subject objectives

1. To introduce students to the basic issues of population and conservation genetics.
2. To introduce students to the importance of genetic diversity for the health of populations and species.
3. To introduce methods for analysing genetic variation and determining genetic structure.
4. To indicate genetic goals in natural population management and conservation efforts.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	Student knows the limitations of his/her own knowledge and understands the need for continuous learning and development.	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[GBEL3_K01] The utilization of theoretical knowledge in laboratory and production practice.	Student is ready to apply theoretical knowledge in practice laboratory and in the design of conservation efforts.	[SK5] implementation of a problem task [SK8] observation of student's independent or team work
[GBEL3_U02] Utilize computer programs for performing analyses and calculations, as well as utilize databases and bioinformatics tools to solve biological problems.	Student applies basic statistical methods and bioinformatics techniques and tools to describe phenomena and analyse biological data.	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[GBEL3_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze their results, and draw conclusions.	Student, under the guidance of the supervisor, plans and carries out simple research tasks in the field of conservation genetics.	[SU2] presentation/project/paper/ report [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[GBEL3_W01] Understanding the structure and properties of basic types of biological macromolecules, molecular mechanisms of metabolic pathways and genetic information flow, as well as sources of genetic variability in organisms and mechanisms of evolution; explaining the rules of inheritance, elucidating differences in the structure and functioning of prokaryotic and eukaryotic cells, and understanding the structure and functional relationships at the cellular and tissue levels.	Student describes the mechanisms of flow of genetic information and regulation of its expression, explains the rules of inheritance and the sources of variation in organisms.	[SW1] oral statement/ conversation/discussion
[GBEL3_W02] Knowledge of mathematics, physics, and chemistry is necessary for understanding biological phenomena and processes, as well as their application in research methodology.	Student has knowledge of the use of statistical methods and information technology tools in the field related to the studied course.	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task

Subject contents

Population genetic structure. Genetic equilibrium.Evolution in populations: natural selection.Methodology in applied genetics in conservation efforts. Genetic variability: measures, significance in time and space.Genetic, demographic and environmental factors in biodiversity conservation. Effects of population reduction. Inbreeding depression.Population fragmentation, Gene flow between populations.Causes of species extinction. Relationship between loss of genetic variation and extinction.Genetics and the future of endangered species. Conservation units: evolutionary significant and management units. Reintroductions.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
short tests	51.0%	70.0%
homework	51.0%	15.0%
presentation	51.0%	15.0%

Recommended reading	Basic literature	Used in class: • Charon K.M., Świtoński M. Genetyka i genomika zwierząt. PWN Warszawa, 2019. • Fletcher H., Hickey I., Winter P. Krótkie wykłady Genetyka. PWN Warszawa, 2019. • Douda K., Sell J., Kubíková-Peláková L., Horký P., Kaczmarczyk A., Mioduchowska M. 2014. Host compatibility as a critical factor in management unit recognition: population-level differences in mussel-fish relationships. Journal of Applied Ecology, 51(4): 1085-1095. Studied by the student: • Scientific publications selected by the teacher and made available to students.
	Supplementary literature	Hartl D.L., Clark A.G. Podstawy genetyki populacyjnej. Wydawnictwo Uniwersytetu Warszawskiego, Warszawa 2010 Frankham R., Ballou J.D., Briscoe D.A. Introduction to conservation genetics. Cambridge University Press, Cambridge, 2010
	eResources addresses	
Example issues/ example questions/ tasks being completed	Presentation on conservation efforts involving populations of the noble crayfish inhabiting Pomeranian rivers.	
Work placement	Not applicable	

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