

SYLLABUS

Name: Conservation genetics (25-BI-S2-W-CG-AN)

Name in Polish: Genetyka konserwatorska

Name in English: Conservation genetics

Information on course:

Course offered by department: Faculty of Biological Sciences

Course for department: Faculty of Biological Sciences

Default type of course examination report:

Grading

Language:

English

Short description:

Prerequisites regarding knowledge, skills, and social competences for the course/module:

Basic knowledge of population genetics.

Student's own work:

- preparing for classes: 15h
- reading scientific papers: 20h
- project preparation: 25h
- preparation to final test: 20h

Description:

Educational aims:

- understanding of need to keep a high genetic diversity in the natural populations;
- expanding knowledge of a population genetics;
- assignment of traditional and modern molecular methods in nature conservation;
- methods in a conservation genetics: reintroduction, breeding applications and restitution of species, use of specialised tools and databases in conservation genetics.

Course content:

- Lectures (on-line):
 - methodology of conservation genetics in natural populations; genetic variation and its estimating in planning biodiversity conservation, species extinction, endangered and extinct species, quantitative genetic variability.
 - modern research techniques in conservation genetics, genetic consequences of population size reduction: loss of genetic variation in small populations, importance of drift and selection in populations, effective population size, and patterns of molecular evolution.
 - the use of conservation genetics in the management of endangered species in wild and captive populations, breeding programmes, invasive species, hybridisation, gene flow and introgression, habitat fragmentation and its genetic consequences for populations, molecular methods in the research of population genetic architecture, conservation genomics.
- Workshops (T):
 - identification of conservation units (IUCN) and wildlife forensic – case studies;
 - non-invasive sampling and planning own genetic variation analysis;
 - selected researches, reintroduction/restitution/breeding programs and biomonitoring on genetic variation conducted in Poland and abroad;
 - analyses of genetic data and population parameters with simple softwares and packages.

Bibliography:

Mandatory and recommended reading list:

Frankham R., Ballou J.D., Briscoe D.A. 2010. Introduction to Conservation Genetics. Cambridge University Press;
Frankham R., Ballou J.D., Briscoe D.A. 2004. A primer of conservation genetics. Cambridge University Press;
Frankham R., Ballou J.D., Ralls K., Eldridge M.D.B., Dudash M.R., Fenster C.B., Lacy R.C. & Sunnucks P. 2017. Genetic Management of Fragmented Animal and Plant Populations. Oxford University Press
Höglund J. 2009. Evolutionary Conservation Genetics. Oxford University Press;
van der Werf J., Graser H.-U., Frankham R., Gondro C. 2009. Adaptation and Fitness in Animal Populations. Evolutionary and Breeding Perspectives on Genetic Resource Management. Springer Science+Business Media B.V.;
Hartl D.L., Clark A.G. 2007. Principles of Population Genetics. Sinauer
Hamilton M.B. 2009. Population Genetics. Wiley-Blackwell, A John Wiley & Sons, Ltd., Publication.

Learning outcomes:

Intended learning outcomes

Student:

K_W01

characterises the genetic diversity of population and its importance in conservation genetics;

K_W10

describes molecular tools used in conservation genetics;

K_U07

prepares an outline of a reintroduction/restitution/breeding program for selected species in natural or artificial populations;

K_K02

actively participates in team/individual project designing;

K_K04

recognizes the need to protect the genetic resources of the population, adheres to ethical standards in planning restitution/reintroduction/breeding programs of animal and plant species.

Assessment methods and assessment criteria:

Assessment methods for the intended learning outcomes:

- Lectures (on-line):
- written test;
- Workshops:
- preparing project (individual or group) and its presentation.

Credit requirements for individual components of the course/module:

- Lectures (on-line):
- written test (at least 51%);
- Workshops:
- classes attendance, project and its presentation.

Course credits in various terms:

<without a specific program>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2024/25-Z	