SYLLABUS

Name: ***Phylogenetics (25-BI-S2-E2-PH-AN)***
Name in Polish: **Filogenetyka**
Name in English: ***Phylogenetics***

Information on course:

Course offered by department: Faculty of Biological Sciences
Course for department: Faculty of Biological Sciences

Default type of course examination report:

Examination

Language:

English

Short description:

Prerequisites regarding knowledge, skills, and social competences for the course/module
Basic knowledge of evolutionary and systematic biology, statistics, botany and zoology.

Student's own work:
- prepatring for classes: 10h
- reading publications: 15h
- homework assignments/presentation: 20h
- preparing for a test and exam: 20h

Description:

Educational aims:
To introduce currently used methods of phylogenetic reconstructions, the role of phylogenetics in comparative studies and the methods of assessing the role of evolutionary history on traits of living organisms.

Course content:
Lectures:
- history of phylogenetic thought; phylogenetically informative characters;
- methods of phylogeny reconstructions: Maximum Parsimony, Maximum Likelihood, Bayesian Inference;
- morphological phylogenetics: character selection and scoring;
- molecular phylogenetics: gene tree vs species tree, molecular clock and tree calibration;
- incongruence of phylogenetic hypotheses;
- phylogenetic comparative methods – detection and measurement of phylogenetic signal
- introduction to phylogenetic statistics – Phylogenetic Independent Contrasts (PIC), Phylogenetic Generalised Least Squares (PGLS).
Classes: practical application of the methods listed above.

Bibliography:

Mandatory and recommended reading list:
Selected chapters:
Futuyma D.J., Kirkpatrick M. 2017. Evolution. 4th edition. Sunderland: Sinauer.
Hall B.G. 2018. Phylogenetic trees made easy: a how-to manual. 5th edition. Sunderland: Sinauer.
Paradis E. 2012. Analysis of phylogenetics and evolution with R. New York: Springer.
Wiley E.O., Lieberman B.S. 2011. Phylogenetics: theory and practice of phylogenetic systematics. 2nd edition. Hoboken: John Wiley & Sons.

Learning outcomes:

Intended learning outcomes
Student:

K_W02
- understands the role of phylogenetics in comparative studies;

K_W10
- knows currently used statistical and phylogenetic methods;

K_U05
- chooses and applies proper phylogenetic method;

K_K07
- understands the need to constantly update knowledge of phylogeny of studied organisms.

Assessment methods and assessment criteria:

Assessment methods for the intended learning outcomes:
- written exam,
- continuous assessment of student’s work during classes.

Credit requirements for individual components of the course/module:
Classes:
- continuous assessment of student’s work during classes,
- presentation.
Lectures:
- written exam.

Course credits in various terms:

<without a specific program>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	3	2023/24-L	