



Syllabus

Term: 2026/27/1

Subject name: General Ecology ea.

Subject code: ENBIOB0801

Unit (Unit code)

(BIOLOGIA)

Lecturer responsible for the course: Dr. CSABAI Zoltán Szabolcs

Requirement: Exam

Classes per week : 2/0/0

Classes per term: 26/0/0

Purpose of education:

Course objectives and/or learning outcomes:

Objectives: The lecture intends to introduce students to ecology. The aims of the course are to provide up-to-date, general ecological knowledge and approach, to give an insight into the organization of the nature on a supraindividual basis, to introduce the conceptual, structural elements and community organizing processes. The acquired knowledge provides the basis for the specialization courses of ecological courses in the Master's degree program.

Learning outcomes: Students successfully completing the course will have *knowledge* on the principles of organic organization, its biological significance, will know the concepts and terms of the field of ecology, and apply them correctly; will have the *ability* to evaluate and explain ecological processes on the basis of spatial and temporal changes of populations and communities; will be *able* to accept additional information on any aspects of ecology and will *aspire* to apply ecological knowledge during their further studies. Their positive *attitude* towards ecological approach and innovative methods will increase significantly.

Contents:

Course outline

Week 1: Levels of biological organization with a special emphasis on supraindividual organization. What does an ecologist do? Concepts, aims and scope. Central hypothesis, crucial facts and main questions. Assignment of ecology in biological sciences.

Week 2: Fundamental reference system in ecology. Environment and tolerance. Development of the niche concept: characterization, segregation, overlaps.

Week 3: Concept and characteristics of populations and communities. Metapopulation and metacommunity concepts, types of metapopulations. Introduction to modeling of population processes.

Week 4: Regulation of populations and the elemental population model. Populations in changing environment, environmental



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feedbacks, density-dependent changes.

Week 5: Concept of (bio)diversity, diversity functions, diversity ordering. Different aspects and difficulties in measuring diversity.

Week 6: Population interactions, separation of elemental interactions based on Lotka-Volterra equations. The concept of competition, the definition of competition types. The intraspecific competition.

Week 7: Interspecific competition, Lotka-Volterra interference models. Coexistence of competitors.

Week 8: Predation models, functional response. Trophic relationships, herbivores, mutualism.

Week 9: Life-history strategies

Week 10: Optimality models and their application

Week 11: Spatial patterns of populations: spatial constraints and coexistence.

Week 12: Species composition (in spatial series): texture and cotexture. Spatial patterns of communities: horizontal zones, patches, vertical layers, genesis and importance of patterns.

Week 13: Dynamics of communities: primary and secondary succession, fine-scale processes. Material cycles and energy flow in ecological systems.

System of examing and valuation:

Oral exam is based on lectures, accessible electronic sources and lecture materials. Before the beginning of the oral exam students have to pass a written preliminary test containing 10 questions about the basic knowledge, selected from a list provided to students at the beginning of the semester. Preliminary test results can be “fail” between 0–69% or “passed” 70–100%, in the case of the later one, oral exam can be started. The successful preliminary test provides possibility for oral exam only on the given day. Oral exams are evaluated based on a 5-grade scale.

Bibliography:

1. An electronic textbook is available from the lecturers (slides of the lectures in pdf format).
2. selected scientific papers and chapters of recommended books



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