

**56S1-EKOLO**

**ECOLOGY**

**ECTS: 3.5**

**HOURS PER SEMESTER/WEEK:** LECTURES: 15/1; CLASSES: 30/2

**FIELD OF THE STUDY:** Environmental protection

**Level of study:** First-cycle (Engineer's degree) program

**Course status:** obligatory \*

**Year of the study:** I

**COURSE CONTENTS**

**LECTURES:** Scope of ecology; levels of life organization. Principles of functioning of ecological systems. Environmental factors and their influence on the functioning of organisms. Ecological tolerance. Ecological niche. Ecological succession. Population genetics: genetic equilibrium, mechanisms of evolution, speciation. Biodiversity in the biosphere: dimensions and levels, spatial variation, measures, importance. Overview of biomes with elements of biogeography. Applied ecology: exploitation of the population, biological and integrated methods of pests and parasites control.

**CLASSES:** Population and its characteristics as a group system. Population demography. Dynamics and strategies of population development. Interactions between populations. Biocenosis and its characteristics. Types of biocenoses. Food chains and networks. Ecosystem; components and functioning. The flow of energy and the circulation of matter in ecosystem. Primary and secondary production. Ecological efficiencies. The concept of balance in the ecosystem and factors disturbing it. Classifications of ecosystems. Cycles of elements in nature. Bioindication. Plants as bioindicators of the status of the environment. Selected methods of studying ecological systems at different levels of organization.

**EDUCATIONAL PURPOSE:** Understanding the principles of the functioning of nature at all levels of its organization and the threats resulting from the disturbance of its balance.

**LEARNING OUTCOMES**

**Knowledge.** The student characterizes the components, structure, functions, and dynamics of supra-organismal ecological systems, and indicates their determinants, as well as intra- and inter-component and intra- and inter-system relationships; explains the basic ecological processes at the level of population, ecosystem and biosphere; identifies the causes, extent, and effects of human impact on ecological systems and processes.

**Skills.** The student is able to search for, critically organize and select information in the field of ecology; to calculate and interpret indicators describing and comparing the structure and dynamics of supra-organismal ecological systems; to construct simple models of ecological relationships.

**Social competences.** The student remains critical of the hypotheses and theories encountered in the literature; works independently and in a team; demonstrates responsibility for the current and future natural reality; applies the acquired knowledge in practical activities related to protecting and shaping the environment.

**TEACHING FORMS AND METHODS**

**Lectures.** Information lecture with a multimedia presentation.

**Classes.** Auditorium exercises, lab exercises.

**FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES**

**Lectures.** Written test - pass guaranteed with 60% of the maximum score.

**Classes.** Written test - 2 parts; pass guaranteed with 60% of the maximum score in both parts independently.

**BASIC LITERATURE**

1) Sawicka J., Szymczak-Piątek M., Wieczorek J., Wybrane zagadnienia ekologiczne, Wyd. Wyd. SGGW, R. 2004. 2) Wiąckowski S., Ekologia ogólna, Wyd. Wyd. Oficyna Wyd. Branta, R. 1999. 3) Banaszak J., Wiśniewski H., Podstawy ekologii, Wyd. wyd. Uczelniane WSP w Bydgoszczy 1999. 4) Weiner J., Życie i ewolucja biosfery. Podręcznik ekologii ogólnej, Wyd. Wyd. Nauk. PWN, R. 2003. 5) Krebs C.J., Ekologia. Eksperymentalna analiza rozmieszczenia i liczebności, Wyd. Wyd. Nauk. PWN, R. 2011. 6) Zimny H., Ekologia ogólna, Wyd. wyd. Agencja Reklamowo Wydawnicza A. Grzegorzczak, R. 2002. 7) Mackenzie A., Ball A.S., Virdee S.R., Krótkie wykłady. Ekologia, Wyd. Wyd. Nauk. PWN, R. 2000. 8) Skrzyczyńska J., Wybrane zagadnienia z ekologii, Wyd. Wyd. Akademii Podlaskiej, R. 2006. 9) Jastrzębska M., Kostrzewska M.K., Wanic M., Wybrane zagadnienia z ekologii. Zeszyt do ćwiczeń, Wyd. Wyd. UWM w Olsztynie, R. 2012.

**ADDITIONAL LITERATURE**

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**THE TEACHER/TEACHERS CONDUCTING THE CLASSES:**

dr hab. inż. Magdalena JASTRZĘBSKA, prof. UWM [magdalena.jastrzebska@uwm.edu.pl](mailto:magdalena.jastrzebska@uwm.edu.pl)

Department of Agroecosystems and Horticulture

Plac Łódzki 3, 10-721 Olsztyn, POLAND