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Faculty of Environment

Study material
ENVIRONMENTAL MICROBIOLOGY

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Objectives

Students will gain deep knowledge in the field of environmental microbiology, especially regarding the occurrence of microorganisms in various natural and anthropogenically affected habitats, the role of microorganisms in the ecosystem services of these habitats, and in biogeochemical cycles. Emphasis will be placed on soil microbiology. The ecological relationships between microorganisms and other organisms and the biochemical nature of these processes will be mentioned, as well as research methods. The student is expected to understand general microbiology, basics of genetics and biochemistry.

Study topics

1. Occurrence and diversity of microorganisms in various environments and factors affecting it.
2. The role of microorganisms in the provision of ecosystem services
3. Ecology of microorganisms, competitive strategies of microorganisms
4. Soil microbiology. Soil as an environment for microorganisms. Soil water.
5. Relationships of microorganisms and plants (mycorrhizal symbiosis, nitrogen fixation, rhizosphere and its function)
6. Relationships of microorganisms to other multicellular organisms
7. Biogeochemical cycles and related microbial processes. Nitrogen cycle in nature
8. Methods for studying microorganisms in the environment

Study literature

ELSAS, Jan Dirk van, Janet JANSSON a Jack T. TREVORS, ed. Modern soil microbiology. 2nd ed. Boca Raton: CRC Press, c2007. Books in soils, plants, and the environment. ISBN 978-0-8247-2749-9.

SCHMIDT, Thomas M. a Moselio SCHAECHTER. Topics in ecological and environmental microbiology. Amsterdam: Elsevier/Academic Press, c2012. ISBN 9780123838797.

HURST, Christon J., ed. Manual of environmental microbiology. Washington, DC: American Society for Microbiology, 1997. ISBN 1-55581-087-X.