

**Subject Area: Advanced Methods in Biotechnology and Biodiversity**

**Subject: Techniques for biodiversity of soil microorganisms**

**Level: PhD**

**Year: I-IV**

**Semester: 1-2**

**Speciality: N/A**

**Status: Facultative**

**ECTS: 2**

**Department(s): Microbiology**

**Cooperating Department:**

**Form of teaching (Number of hours; Form of assessment: Exam or Credit)**

*Lectures*

*Conversatoria*

*Practicals*

*Total*

**15**

**15**

### **Staff:**

SUBJECT COORDINATOR: Prof. Zofia Piotrowska-Seget Ph.D.

CONVERSATORIA: : Prof. Zofia Piotrowska-Seget Ph.D.

PRACTICALS: : Prof. Zofia Piotrowska-Seget Ph.D.

### **Contents:**

CONVERSATORIA:

Soil as a complex system. Microbial diversity and soil functions, biodiversity as indicator of soil quality. Molecular, biochemical and immunological methods used in soil microbiology. The impact of various toxic substances on biodiversity of microbial communities.

PRACTICALS:

Direct and indirect counts of soil microorganisms. Use of MIDI-MIS method for bacteria identification. Estimation of soil microbial community structure by FAME and PLFA profiling using gas chromatography and MIDI software.

### **Methods and forms of teaching:**

Students will conduct experiments according to the protocols.

### **Requirements:**

Knowledge on general microbiology, biochemistry and ecology.

### **Literature**

1. Paul E.A. (ed) 2006. Soil microbiology, ecology and biochemistry. Academic Press.
2. van Elsas J.K., Janson J.K., Trevors J.T. 2007 (eds). Modern soil microbiology. CRC Press
3. Bardgett D.R., Usher M.B., Hopkin D.W. 2005. Biological diversity and functions in soils. Cambridge University Press.

**Remarks (if necessary):**