

Course name:**BIOLOGICAL SOIL QUALITY**

ECTS	3
Course status	obligatory
Course final assessment/evaluation of outcomes	exam
Prerequisites	soil science

Main field of study:**AGRICULTURE / SOIL SCIENCE / ENVIRONMENTAL SCIENCE**

Profile of study	General academic
The code of studies (education level)	bachelor/master
Semester of studies	winter / summer
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Agriculture and Economics
Name of department offering the course	Department of Soil Science and Agrophysics
Course coordinator	dr hab. inż. Agnieszka Józefowska, prof. URK

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline

KNOWLEDGE – student knows and/or understands:

SQDR_W01	Student has a solid understanding of soil biodiversity and soil functions	OŚ2_W06 RO2_W03	P, R
SQDR_W02	Student expanded and strengthened knowledge about the transformation of the environment by human, knows the factors causing soil degradation	OŚ2_W13	P
SQDR_W03	Student knows the indexes used to assess soil quality	RO2_W12	R

SKILLS – student is able to:

SQDR_U01	Student has the ability to analyse and select information, especially from online sources critically	RO2_U01	P, R
SQDR_U02	Student has the ability to formulate reasonable judgments based on data from different sources	OŚ_U04	
SQDR_U03	Student fluently uses scientific literature in the field of environmental protection, reads and understands complicated scientific texts in English	RO2_U02	P, R

SOCIAL COMPETENCE- student is ready to:

SQDR_K01	Student can interact and work in a group, and takes part in the discussion	RO2_K02	P, R
SQDR_K02	Student is aware of the social role of the master of soil science and responsibility related to decisions taken as part of professional activity based on professionalism, respect for the law, rules of professional ethics and social norms, including responsibility for the quality of the environment and its proper development	OŚ_K01	P, R
SQDR_K03	Student understands the need to learn throughout life, can inspire and organise the learning process of other people	RO2_K07	P, R

Teaching contents:

Lectures	15	hours
----------	----	-------

- 1 Soil in the environment
- 2 Ecosystem services provided by soil
- 3 Diversity of soil organisms
- 4 Types of transformation of the natural environment caused by industrial activities
- 5 Soil in current European policy
- 6 Soil quality – Legal standards
- 7 Biological quality indicators of soils
- 8 TRIAD method
- 9 Anthropogenic causes of soil degradation and exclusion from primary production
- 10 The role of soil organisms in soil regeneration and reclamation

Accomplished learning outcomes	SQDR_W01, SQDR_W02, SQDR_W03, SQDR_W04, SQDR_W05, SQDR_K02,
Verification methods, rules and criteria of outcome assessment	Final report assessment (showing the ability to assess soil quality) + class participation (participation in discussions and quizzes during classes) + observation of individual and team behaviors (focused on social competencies). To pass, at least 50% of points from the report are required. Active participation in discussions and quizzes will be rewarded with an extra point per activity. Final grade = 0.6 x lecture grade + 0.4 x practicals grade.

Classes **10** **hours**

- 1 Soil quality assessment using commonly available methods
- 2 Practical application of the TRIAD method (ecological risk assessment)
- 3 Biological soil quality assessment (soil respiration)
- 4 Soil fauna as an indicator of soil quality
- 5 Methods for improving soil quality – discussion based on scientific and popular scientific articles

Accomplished learning outcomes	SQDR_W01, SQDR_U01, SQDR_U02, SQDR_U03, SQDR_K01, SQDR_K02, SQDR_K03,
Verification methods, rules and criteria of outcome assessment	Final report assessment (showing the ability to assess soil quality) + class participation (participation in discussions and quizzes during classes) + observation of individual and team behaviors (focused on social competencies). To pass, at least 50% of points from the report are required. Active participation in discussions and quizzes will be rewarded with an extra point per activity. Final grade = 0.6 x lecture grade + 0.4 x practicals grade.

Field classes **5** **hours**

Topics of the field classes	Soil quality evaluation in the field
Accomplished learning outcomes	SQDR_W01, SQDR_K01,
Verification methods, rules and criteria of outcome assessment	A written field study report

References:

Basic	1. Current legal norms, regulations, and directives discussed in the first lecture 2. Hillel, Daniel. Soil in the environment: crucible of terrestrial life. Elsevier, 2007, 3. Nielsen M.N. Winding A. Binnerup S. Microorganisms as indicators of soil health. Denmark: National Environmental Search institute, 2002
Supplementary	1. Current publications provided by the instructor during the first practical class 2. Józefowska A., i in. 2020, Consequences of land-use changes for soil quality and function, with a focus on the EU and Latin America, [w] Climate Change and Soil Interactions, 207-228

Structure of learning outcomes:

soil science, environmental science, agriculture, natural resources	3 ECTS**
---	------------------------

Discipline: # (provide appropriate symbol - if the course relates to more than one academic discipline)			...	ECTS**	
Structure of student activities:					
Contact hours		36	hours	1,4	ECTS**
including:	lectures	15	hours		
	classes and seminars	15	hours		
	consultations	5	hours		
	participation in research	...	hours		
	mandatory traineeships	...	hours		
	participation in examinations	1	hours		
e-learning		...	hours	...	ECTS**
student own work		39	hours	1,6	ECTS**