MODULE INFORMATION SHEET

Name of Module Unit	**Biology and Ecology**
Name in polish language	Biologia i ekologia
Module type	compulsory
Form of studying	full-time day courses
Level of study	undergraduate course (B.Sc. level)
Type of study (for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environmental Engineering
Responsible department	Department of Biology
Responsible person	Ewa Karwowska, D.Sc, Ph.D. Bożenna Słomczyńska, Ph.D.

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
2	30(Exam)					3

Objectives (summary)

An explanation and education of the microbial role in biological processes in the environment and the principles regulating the relations between biotic and abiotic environmental factors. An approach to understanding the processes determining contaminants neutralisation and recultivation of degraded areas. An evaluation of biological threats in the internal and external environment.

Prerequisites

none

Rules of integrated grade setting

Exam's grade

Recommended readings

Handbook of Water and Wastewater Microbiology. Ed Mara D., Horan N., vol 1 and 2. Elsevier Academic Press, London, 2003.

Odum E.P., Brewer E.,Barrett G.W.: Fundamentals of Ecology, 5th edition, ed. Brooks Cole, Academic Press, 2004.

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	A characteristics of prokaryotic and eukaryotic organisms. Morphology and functions of cell components. The role of animal and plant tissues in physiological processes.	4	S
2	A characteristics of chosen groups of microorganisms : viruses, bacteria, fungi, algae, protozoa, an their role in biosphere	2	S
3	Methabolism – nanbolism and catabolism. Type of nutrition: heterotrophic, autotrophic and mixotrophic organisms. Energy generation systems in living cells. ATP production : oxidative phosphorylation, substrate phosphorylation, photooxidation. Electrons transport chain. Aerobic and anaerobic respiration. Fermentation. Photosynthesis as a fundamental anabolic process.	6	S
4	Role of microorganisms in biocorossion of various materials.	1	S
5	Fundamental terms in ecology. Term of environment. Ecosystem-spatial structure, parts and function	2	S
6	Principles of matter circulation and energy flow in the ecological systems. Primary and secondary production. Trophic levels, food chain and web.	2	S
7	Biogeochemical cycles. Role of microorganisms in cycling of carbon, nitrogen, phosphorus and sulphur in the environment	3	S
8	Limiting elements in the ecosystems- Liebig's and Shelford's law.	2	S
9	Ecology of inland waters. Plant and animals communities in aquatic reservoirs. Selfpurification of water. Mechanisms of degradation of aquatic bodies-eutrophication.	3	S
10	Organisation of forest and agricultural ecosystems. Biological diversity.	1	S
11	Water, soil and air as a place of existence oan transfer of pathogenic microorganisms. Microbiological and parasitological indicators of water, soil and air pollution.	3	S
12	An application of toxicological assays in environment protection.	1	Ex
	Total	**30**	**hours**

S – topics listed in the legal study programme standards from 12.07.2007
Ex – extended topics

Lecturers

Ewa Karwowska, D. Sc., Ph.D.
Bożenna Słomczyńska, Ph.D.

Assessment method

Exam