

MODULE INFORMATION SHEET

Name of Module Unit	Environmental Biology
Name in polish language	Biologia środowiska
Module type	compulsory /-elective
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	Dr inż. Agnieszka Tabernacka

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
5	15	-	30	-	-	4

Objectives (summary)

The main goal of the course is to acquaint students with basic knowledge of biological wastewater treatment processes and biological disposal of solid wastes as well as microbiological aspects of drinking water treatment.

Prerequisites

Biology and Ecology

Rules of integrated grade setting

Weighted average of lectures grade and laboratory grade

Recommended readings.

Grady C.P.L., Daiger G.T., Lim H.C. (1999) „Biological Wastewater Treatment”, Marcel Dekker Inc., New York, Basel.

Marshall K.C. (red) „Advances In Microbial Ecology”, Plenum Press, New York and London, 1990.

Jördening H.-J., Winter J. (red) (2005) „Environmental Biotechnology. Concepts and Applications”, Wiley–VCH Verlag GmbH & Co. KGaA, Weinheim.

Lester J.N., Birkett J.W. (1999) „Microbiology and Chemistry for Environmental Scientists and Engineers”, E & FN Spon, London.

Liu D.H.F., Lipták B.G. (red) (1999) „Environmental Engineers' Handbook. Second Edition”, Lewis Publishers, CRC Press, Boca Raton, Florida.

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	Biochemical degradation of organic substances. Microorganisms present in aerobic biological wastewater treatment systems (activated sludge and trickling filters). Wastewater treatment in ponds and lagoons. Biological dephosphatation and nitrogen removal from wastewater. Removal of pathogenic microorganisms from wastewater.	6	Ex
2	Anaerobic digestion of wastewater, sludges and biosolids. Aerobic biological processes of solid wastes disposal.	6	Ex
3	Microbiological aspects of drinking water treatment. Antibiotic resistance of microorganisms.	2	Ex
4	Achievement test (exam)	1	
Total		15	hours

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

Ex – extended topics

Lecturers

Dr inż. Agnieszka Tabernacka

Assessment method

Written or oral exam

Contents of laboratory

	Topics	Time (hrs.)	Scope (S / Ex)
1	Impact of wastewater composition on the biochemical degradation of organic substances	3	Ex
2	Microorganisms present in activated sludge. Impact of abiotic conditions on biocenosis of activated sludge.	5	Ex
3	Assessment of enzymatic (dehydrogenase) activity of microorganisms of activated sludge. Assessment of wastewater treatment effectiveness.	4	Ex
4	Microorganisms present in trickling filters	2	Ex
5	Biological phosphorus and nitrogen removal from wastewater	4	Ex
6	Assessment of effectiveness of chlorine and ozone as the disinfectants of drinking water	4	Ex
7	Microbiological activity in aerobic waste treatment processes (composting)	4	Ex
8	Achievement tests	4	Ex
Total		30	hours

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

Ex – extended topics

Persons responsible for laboratory

Dr inż. Agnieszka Tabernacka

Assessment method for laboratory

Participation in laboratory course, reports, two written tests