MODULE INFORMATION SHEET

Name of Module Unit	**Environmental chemistry**
Name in polish language	Chemia 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 Informatics and Environment Quality Research
Responsible person	Dr Małgorzata Kucharska

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

Objectives (summary)

Essential knowledge in the field of natural and anthropogenic substances in the environment – origin, fate, environmental impact and occurrence.

Prerequisites

Chemistry

Rules for integrated grade definition

The mean value of the laboratory test and examination

Recommended readings

Spiro T. G., Stigliani W. M., *Chemistry of the Environment,*Prentice Hall, New Yersey 07458, 2003
Evangelou V. P., *Environmental Soil and Water Chemistry,* A Wiley-Interscience Publication, John Wiley and sons, New york, 1998
Csursos M., *Environmental Sampling and Analysis, lab Manual,* Lewis publishers, New York
Water Quality –European Standards

Contents of lectures (syllabus)

	Topics	**Time** (hrs.)	**Scope** (S / Ex)
1	Natural waters – main cations amd anions in surface and ground waters – origin, concentration and reaction.	2	S
2	Gases in surface and ground waters – oxygen, carbon dioxide, hydrogen sulphide.	1	S
3	Biogenic compounds in water – eutrophication	1	S
4	Natural organics in waters	1	S
5	Air pollution – sulphur dioxide, nitrogen oxides, carbon dioxide	2	S
5	Tropospheric and stratospheric ozone	1	S
6	Chemical composition of soil. Silicates, aluminosilicates, clay minerals.	2	S
7	Organic substances in the soil –formation and nature of humic substances	2	S
8	Heavy metals in the environment – origin, transformation, mobility, environmental impact	1	S
9	Global anthropogenic pollution	2	S
	Total	**15**	**hours**

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

Lecturers

Dr Małgorzata Kucharska

Assessment method

Examination

Contents of laboratory

	Topics	Time (hrs.)	Scope (S / Ex)
1	Water analysis – pH, conductivity, smell, colour, turbidity, determination of cations: Mn, Fe,	3	S
2	Water analysis – determination of basicity, hardness (Ca + Mg and total), carbon dioxide free and aggressive (I phase)	3	S
3	Water analysis – determination of oxygen, permanganate index and aggressive carbon dioxide II part	3	S
4	Water analysis – determination of chlorides, nitrates and sulphates.	3	S
5	Water analysis – determination of ammonium, nitrites, free and combined chlorine.	3	S
6	Wastewater analysis: determination of total suspended solids (I phase), dry residue (I phase), determination of COD and total nitrogen (I phase).	3	S
7	Wastewater analysis: determination of total suspended solids (II phase), dry residue (II phase), total nitrogen (II phase) and BZT_7 (I phase).	3	S
8	Wastewater analysis – determination of BZT_7 (II phase), total phosphorous and phosphates.	3	S
9	Wastewater analysis – determination of surfactants.	3	S
10	Test. Repetition of outstanding laboratories	3	S
	Total	**30**	**hours**

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

Person responsible for laboratory

Dr Małgorzata Kucharska

Assessment method for laboratory

Reports of laboratory exercises and written test