

Course title: Environmental Chemistry Chemia środowiska		
Field of study:		
Type of study: full-time studies	The level of education: first-cycle studies	Education profile: general academic
Type of subject: Wybierz element.	Semester: Wybierz element.	Course language: English
Course type: lecture, tutorials	Number of hours: 15L, 15T	ECTS Credit points: 5

SYLLABUS

Form of classes - lectures	Hours
Course organization, assignment rules	1
Geoecosystems characterization	1
Chemical reactions in the atmosphere: formation and decomposition of stratospheric ozone	1
Chemical reactions in the atmosphere: formation of smog	1
Chemical reactions in the atmosphere: acid rains	1
Earth energy balance: greenhouse effect	1
Water in environment	1
Basic parameters of natural water	1
Nutrient elements in natural waters – eutrophication	1
Structure, characteristics and role of soil	2
Geochemical cycles of selected chemical elements	1
Inorganic and organic pollutants in environment	1
Chemical pollution in environment – self-treatment processes and chemical treatment methods	1
Assignment	1
Form of classes - tutorials	Hours
Introduction to the course, workplan presentation, rules of assignment	1
Gaseous state, ideal gas law	1
Mixtures of gases, Dalton law of partial pressures	1
Atmospheric chemistry – atmospheric ozone	1
Atmospheric chemistry – principal and trace elements in the atmosphere	1
Solubility of simple gases in water, Henry's law	1
Gases reacting with water	2
Water chemistry: hardness, alkalinity, pH of water	1
Hydrosphere chemistry: carbonate equilibria	1
Dissolved oxygen in water	2
Chemistry of soil, components of soil	1
Nutrient substances in soil	1
Assignment	1

COURSE STUDY METHODS

1. blackboard, interactive whiteboard, e-learning platform
2. multimedia presentation
3. sets of problems for solving during classes and for individual solution
4. physico – chemical tables, periodic table of elements

METHODS OF ASSESMENT (F - formative; S - summative)

F1. - activity in classes
S1. – test on lectures
S2. – tasks during tutorials

STUDENT WORKLOAD

Form of activity	Workload (hours)
Participation in lectures	15 h
Participation in classes	15 h
Laboratory	- h
Participation in project classes	- h
Participation in seminar	- h
Preparation course on e-learning	- h
Test	- h
Entrance test for laboratory classes	- h
Project's defence	- h
Exam	- h
Consultation hours	40 h
DIRECT TEACHING, hours/ ECTS	70 h / 2,8 ECTS
Preparation for tutorials	45 h
Preparation for laboratories	- h
Preparation for projects	- h
Preparation for seminars	- h
Preparation for e-learning classes	- h
Participation in e-learning classes	- h
Working on project	- h
Preparation for tests	10 h
Preparation for exam	- h
SELF-STUDY, hours/ ECTS	55 h / 2.2 ECTS
TOTAL (hours)	∑ 125
TOTAL ECTS	5 ECTS

PRIMARY AND SUPPLEMENTARY TEXTBOOKS

vanLoon G.W., Duffy S.J., Environmental Chemistry. Global perspective, Oxford University Press, Oxford, UK, 2010
O'Neil P., Environmental Chemistry, CRC Press, UK, 1998
Manahan S.E., Environmental Chemistry, CRC Press, UK, 2009
Silberberg M.S., Principles of General Chemistry, McGraw Hill International Edition, New York, USA 2007
Tchobanoglous G., Burton F., Stensel H.D., Wastewater Engineering Treatment and Reuse, Metcalf&Eddy, Inc, 2004
Gray N.F., Water Technology an Introduction for Environmental Scientists and Engineers, Elsevier, 2005
Evangelou V.P., Environmental Soil and Water Chemistry, Principles and Applications, A Wiley& Sons, Inc, 1998

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