FACULTY OF CHEMISTRY

SUBJECT CARD

Name of subject in English: Environment protection
Main field of study (if applicable):
Specialization (if applicable):
Profile: academic
Level and form of studies: 2st level – supplementary semester, full-time
Kind of subject: obligatory
Subject code: OSC024005
Group of courses: NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30				
Number of hours of total student workload (CNPS)	60				
Form of crediting	Crediting with grade				
For group of courses mark (X) final course					
Number of ECTS points	2				
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes	1				

***PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Knowledge of the basics of general chemistry
2. Knowledge of the basics of biology
3. Knowledge of the basics of chemical engineering
4. Knowledge of basic biotechnology methods in environmental protection

\SUBJECT OBJECTIVES

C1 To familiarize students with the basic terminology used in the protection and shaping of the environment, sozology, environmental law.
C2 Obtaining basic knowledge about environmental threats, the circulation of elements in ecosystems, about the impact of pollution from natural and anthropogenic sources on the environment.
C3 To familiarize students with the principles of the environmental protection system, environmental management system, principles of sustainable development, management of natural resources, including energy resources.
C4 To familiarize students with environmental law, international conventions, environmental policy in the European Union and in Poland.
C5 To acquaint students with the role and effectiveness of technological activities in reducing the negative impact of anthropogenic effects on the environment.
C6 To familiarize the student with the protection and rational use of water resources, including the principles of water management in industry, agriculture and municipal economy.
C7 Obtain basic knowledge in the field of protection of ecosystems, atmosphere, surface waters and soil.
C8 Presenting to students problems related to global and European agricultural policy, food security, production of safe food, as well as demographic problems
C9 Presentation of problems related to global effects, including the greenhouse effect, the state of the ozone layer, eutrophication, steppe.

SUBJECT LEARNING OUTCOMES

related to knowledge:

PEK_W01 Knows and can describe the basic processes occurring in the life cycle of equipment, facilities and technical systems.

PEK_W02 Knows and understands the basics of construction and the essence of the operation of chemical apparatus components in processes in the laboratory and industrial scale.

PEK_W03 Knows the chemical and technological concept of the process.

PEK_W04 Has detailed knowledge of selected environmental issues and has the basic knowledge necessary to understand social, economic and legal conditions in the field of study.

PEK_W05 Has systematic, detailed knowledge in the field of biotechnology, knows modern development trends in this field.

PEK_W06 Knows techniques and tools used in industrial biotechnology and knows its main development trends.

PEK_W07 Has knowledge that allows you to understand the functioning of biological systems.

PEK_W08 Has detailed knowledge covering key issues in the field of biotechnology environment.

related to social competences:

PEK_K01 Is aware of the social role of a technical university graduate. He is ready to act for the socio-economic environment.

PEK_K02 Is ready to take action for the public interest.

PROGRAMME CONTENT

Lectures		**Number of hours**
Lec 1	Basic concepts.	2
Lec 2	Environmental problems related to demographic development and food security	2
Lec 3	Relation of industry and environment	2
Lec 4	Ecological problems in sustainable development	2
Lec 5	Water resources management	2
Lec 6	Use of water in the economy	2
Lec 7	Atmosphere protection	2
Lec 8	Atmosphere protection and gas cleaning	2
Lec 9	Waste in the economy	2
Lec 10	Waste management	2
Lec 11	Soil protection	2
Lec 12	Global effects and environmental policy	2
Lec 13	Phosphorus - environmental and political problem	2
Lec 14	Environmental law	2
Lec 15	Summary of classes and final test	2
	Sum of hours:	30

TEACHING TOOLS USED

N1. Lecture with multimedia presentation

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end)	Learning outcomes number	Way of evaluating learning outcomes achievement
P -Concluding	PEK_W01 - PEK_W08	Final test
P = 3,0 = 50% pkt. 3,5 = 60% pkt. 4,0 = 70% pkt. 4,5 = 80% pkt. 5,0 = 90% pkt. 5,5 = 100% pkt.		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] K.Małachowski, Gospodarka a środowisko i ekologia, wyd.CeDeWu,2011

[2] J.Boć J.K. Nowacki Ochrona Środowiska, Kolonia Ltd, 2008

[3] B.Dobrzańska, G.Dobrzański,D.Kiełczewski, Ochrona środowiska przyrodniczego,wyd.PWN, 2010

[4] M.Górski, Prawo ochrony środowiska,Wolter Kluwer Polska,2009

SECONDARY LITERATURE:

[1]R.Zarzycki, Wprowadzenie do inżynierii ochrony środowiska , fizykochemiczne podstawy inżynierii środowiska, WNT,2007

[2]W.Lewandowski, Proeekologiczne odnawialne źródła energii, WNT 2011

[3]N.Wolański N. Ekologia człowieka PWN 2009

[4]Z.Bukowski Z. Polityka ochrony środowiska w UE PWN 2008

[5]B.Rakoczy ,B. Wierzbowska . Prawo Ochrony Środowiska wyd.Lexis Noxis 2010

[6]P.Mastalerz , Ekologiczne kłamstwa ekowojowników, Wydawnictwo Chemiczne Wrocław 2002

[7]Z.Łucki, W.Misiak, Energetyka a społeczeństwo,PWN ,2012

[8]D.Archer, Globalne ocieplenie, PWN,2010

[9]A.Jędrczak, Biologiczne przetwrzanie odpadów, PWN, 2008

[10] M.Cherka,F.Elżanowski, M.Swora, Energetyka i ochrona środowiska w procesie inwestycyjnym, Wolters Kluwer Polska, 2010

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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