COURSE DESCRIPTION CARD - SYLLABUS

Course name

Surface phenomena in technology, environmental protection and medicine

Course

Field of study

Environmental Protection Technologies

Year/Semester

I/2

Area of study (specialization)

Ecotechnology

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

Katarzyna Dopierała, PhD Eng.

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Tel. 6653772

Wydział Technologii Chemicznej

Instytut Technologii i Inżynierii Chemicznej

ul. Berdychowo 4, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Basic knowledge in general chemistry, inorganic and organic chemistry as well as physical chemistry and basics of environmental protection and chemical technology

Course objective

The aim of course is to gain the knowledge related to causes and effects of interfacial phenomena in specific fields of human activity, especially in technology, medicine and environmental protection.

Course-related learning outcomes

Knowledge

* K_W03 has theoretically supported detailed knowledge in selected topics in the field of environmental protection (P7S_WG P7SI_WG)

*K_W11 has knowlege required to understand the problems of envioronmetal hazards and methods of improving the safety level (P7S_WK)

*K_W13 has detailed knowldege on technological solutions in the field of environmental protection

(P7S_WG P7SI_WG)

Skills

*K_U03 is able to selectively adapt the knowledge in the field of chemistry and realted sciences to plan and solve reserach taks in the field of technology for environmental protecion (P7S_UW P7SI_UW)

* K_U10 can determine the priority in implentation of new approaches in environmental protection

(P7S_UW P7SI_UW)

Social competences

* K_K03 is able to analyze and critically evaluate new areas in technologies for environmental protection, evaluate their innovation potential and technical feasibility (P7S_KK)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written assingment at last class consisting of 5-10 open questions graded in the range of 0-30 pts, and the final grade will be set according to the following scale:

3,0: 10-11 pts

3,5: 12-13 pts

4,0: 14-15 pts

4,5: 16-17 pts

5,0: from 18 pts

In the case of remote teaching there will be written assignment on E-kursy platform organized and graded the same way as during clasroom teaching.

Programme content

The course covers the following topics:

1. Introduction to interfacial phenomena

2. Surface phenomena in technology and nanotechnology

3. Surface phenomena in environmental protection

4. Monolayers and thin surface films

5. Surface wetting

6. Surface phenomena in living organisms and medicine

7. Surface phenomena in production of food, drugs and cosmetics

Teaching methods

Lecture supported by multimedia presentation and group discussion

Bibliography

Basic

1. R. Zieliński, Surfaktanty. Budowa, właściwości, zastosowania, Wyd. 3, Wyd. Uniwersytetu Ekonomicznego w Poznaniu, Poznań 2017

2. G. M. Kontogeorgis, S. Kill, Introduction to Applied Colloid and Surface Chemistry, John Wiley& Sons, 2016

3. W. Norde, Colloids and Interfaces in Life Sciences and Bionanotechnology, CRC Press, 2011

4. M.J. Rosen, J. T. Kunjappu, Surfactants and Interfacial Phenomena, 4th Ed., Wiley, 2012

Additional

1. Z. Sarbak, B. Jachymska-Sarbak, A. Sarbak, Chemia w kosmetyce i kosmetologii, Wyd. MedPharm, Wrocław 2013

2. M. Molski, Chemia piękna, PWN, Wyd.2, Warszawa 2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,6
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	10	0,4

[1] delete or add other activities as appropriate