



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Analysis of contamination of cosmetic and pharmaceutical products

### Course

Field of study

Year/Semester

Technologies of Environmental Protection

1/2

Area of study (specialization)

Profile of study

Ecotechnology

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

full-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

0

0

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

Justyna Werner, PhD

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Faculty of Chemical Technology

Berdychowo 4/101A, 60-965 Poznań

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### Prerequisites

The student has a basic general knowledge of instrumental analysis and analytical chemistry needed when discussing problems related to the analysis of contaminants in cosmetic and pharmaceutical products. The student has the ability to obtain the necessary information from scientific literature, legal acts and databases.

### Course objective

Introduction to legislation, nomenclature, composition of cosmetics and pharmaceutical products. Toxicity overview, safety assessment and possible contamination of cosmetics and pharmaceutical products.



### Course-related learning outcomes

#### Knowledge

The student has theoretically founded detailed knowledge covering selected issues in the field of environmental protection (K\_W03)

The student has extensive knowledge that allows to recognize and differentiate factors dangerous to the environment (K\_W04)

The student has theoretically founded knowledge in the field of environmental monitoring (K\_W12)

The student has extended knowledge of the proper selection of analytical techniques to assess the state of the natural environment (K\_W15)

The student uses the basic legal acts regarding the protection of the natural environment (K\_W19)

#### Skills

The student has the ability to selectively adapt knowledge in the field of chemistry and related fields to the planning and implementation of research tasks in the field of environmental protection technology (K\_U03)

The student is able to selectively select monitoring techniques for the assessment of environmental contamination (K\_U07)

#### Social competences

The student is able to skillfully use professional literature, integrate the obtained information by interpreting and critically evaluating it, and on this basis to formulate competent opinions and reports (K\_K01)

The student understands the need to popularize knowledge in the field of environmental protection (K\_K06)

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Checking the knowledge of the subject:

Lecture - graded in the form of a multiple-choice test (pass from 51% correct answers)

If it is necessary to conduct on line lectures - graded in the form of a multiple-choice test via the e-courses platform (pass from 55% correct answers)

### Programme content

- Definitions: pharmaceutical product, drug, medical device, dietary supplement, cosmetic product, dermocosmetic, immunocosmetic, antiseptic.

- Legal regulations related to the safety assessment of cosmetics.

- Guidelines for the marketing of cosmetic products. Cosmetic product safety assessment report



- International Nomenclature of Cosmetic Ingredients (INCI). Labeling requirements for cosmetics.
- Functions of ingredients used in cosmetic products (base substances, active substances, auxiliary substances - preservatives, antioxidants, UV filters, fragrances, dyes).
- Contamination of cosmetics with heavy metals.
- Toxic interactions of cosmetic ingredients.
- Cosmetic ingredients completely banned in products.
- Chemical and microbiological safety of cosmetics.
- Legal regulations related to the safe use of drugs.
- Pharmaceutical nomenclature (international and trade names of pharmaceutical preparations).
- Excipients in pharmaceutical products (definition, requirements, classification, solvents, antioxidants, isotonic agents, substances affecting the absorption rate, auxiliary substances with multiple effects, preservatives).
- Excipients in the tableting technology (calcium phosphate, lubricants, superdisintegrants - "disintegrants" - tablets that disintegrate quickly in the oral cavity, slow down disintegration, binders, etc.).
- Taste masking substances (flavor enhancers, solubility modifiers, coating, microencapsulation, complexation).
- Contaminants in pharmaceutical preparations: general and genotoxic contamination of drugs, production and degradation contamination.
- Classification of pollutants by type of harmfulness (Cartwright division).
- ICH (International Council for Harmonization of Requirements for Medicines) guidelines on the presence of contaminants in drugs.
- Enantiomers in racemic pharmaceutical raw materials according to FDA.
- Contamination of parenteral preparations.
- Contamination of dietary supplements.
- Pollution of the natural environment with pharmaceuticals and cosmetics.

### Teaching methods

Lecture: multimedia presentation, analysis of examples of cosmetic and pharmaceutical contamination - in the form of a discussion

### Bibliography



Basic

1. K. Jurowski, W. Piekoszewski, Toksykologia i ocena bezpieczeństwa kosmetyków, PZWL, Warszawa 2019;
2. M. Molski „Nowoczesna Kosmetologia. Kosmetyki, zabiegi, suplementy”,
3. J. Arct, K. Pytkowska, A. Ratz-Łyko, K. Kiefert, K. Barska, A. Pauwels „Leksykon surowców kosmetycznych” Wydawnictwa Wyższej Szkoły Zawodowej Kosmetyki i Pielęgnacji Zdrowia, Warszawa 2014; , PWN Warszawa 2014;
4. Praca zbiorowa pod redakcją R. Jachowicz „Postać leku. Optymalizacja leków doustnych i do oczu w nowoczesnej technologii farmaceutycznej” PZWL, Warszawa 2014
5. Praca zbiorowa pod redakcją R. H. Müllera i G. E. Hildebrand „Technologia nowoczesnych postaci leków” PZWL, Warszawa 1998

Additional

1. Ustawa z dnia 4 października 2018 r. o produktach kosmetycznych.
2. Ustawa z dnia 6 września 2001 r. - Prawo farmaceutyczne.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for tests/exam) <sup>1</sup>	10	0,5

<sup>1</sup> delete or add other activities as appropriate