COURSE DESCRIPTION CARD - SYLLABUS

Course name
Instrumental analysis [S1IFar1>AI]

Course

Field of study
Pharmaceutical Engineering

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
15

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of inorganic and analytical chemistry, apparatus used in the chemical laboratory, mathematical tools used in the chemical calculations. Usage a of basic chemical apparatus and volumetric glassware.

Course objective

To familiarize students with instrumental techniques (apparatus, physicochemical phenomena, quantitative and qualitative analysis). Presentation of instrumental techniques: absorption atomic spectrometry (F AAS, ET AAS), optical emission spectrometry (OES) inductive coupled plasma (ICP), microwave induced plasma (MIP), direct current plasma (DCP), UV-VIS spectrophotometry, gas and liquid chromatography, electroanalytical techniques, mass spectrometry). Possibility of using these techniques in the pharmaceutical and medical analysis.

Course-related learning outcomes

Knowledge:
1. student has the necessary knowledge in the field of chemistry for the understanding of phenomena and processes occurring during analysis, k_w4
2. student has theoretically founded general knowledge in the field of analytical chemistry and instrumental analysis k_w04
3. knows classical and instrumental methods used in assessing the quality of substances for pharmaceutical purposes and in quantitative analysis in medicinal products k_w7

Skills:
1. student can obtain the necessary information from the literature to conduct the determination of an analyte in the real sample. k_u01
2. student is able to perform basic chemical analysis, interprets the results of analyzes and draw appropriate conclusions k_u2, k_u03, k_u5, k_u10

Social competences:
1. students can understands the need for self-education and raising their competences in the field of instrumental analysis, k_k1
2. student is able to work both individually and in team during the laboratory work, k_k2

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Knowledge acquired during the lectures is verified during the written exam, carried out in a stationary or remote mode via e-Kursy platform, containing 10 questions with different scores depending on the degree of difficulty. Passing threshold: 55% of points.

Programme content

Theoretical basis of physicochemical phenomena leading to the analytical signal measurement, signal measurement methods, analytical characteristics of the method. Instrumentl techniques: atomic absorption and emission spectrometry, UV-VIS spectrophotometry, electrochemical methods, gas and liquid chromatography , mass spectrometry, continuous and flow injection analysis.

Teaching methods

1. Lecture: multimedia presentation supported with examples presented on the blackboard.
2. Laboratory classes: analyte determinations using analytical apparatus in accordance with the instructor"s directions.

Bibliography

Basic
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4. A Cygański, Metody spektroskopowe w chemii analitycznej, WNT, Warszawa, 2020
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Additional
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Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,00
Classes requiring direct contact with the teacher	50	1,70
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	40	1,30