



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Methods for Assessing Antimicrobial Activity

### Course

Field of study

Pharmaceutical Engineering

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

polish

Requirements

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

0

0

Projects/seminars

Tutorials

15

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

prof. dr hab. n. med. Marzena Gajęcka

Responsible for the course/lecturer:

dr n. med. Dorota Nowak-Malczewska

### Prerequisites

Students entering the course should have well-grounded theoretical and practical knowledge in the field of biology, chemistry at the high school level, as well as from the basic course Microbiology.

### Course objective

Classes aim to familiarize the student with issues related to the impact of physical and chemical factors on microorganisms as well as assess the antimicrobial activity of selected compounds and substances.



## Course-related learning outcomes

### Knowledge

1. Possesses knowledge of mathematics to the extent that allows calculations to be made to correctly interpret the results of microbiological tests. K\_W2
2. Possesses knowledge of microbiology to the extent that allows understanding and description of phenomena and processes related to the action of antimicrobial agents on microorganisms. K\_W3
3. Has knowledge of basic techniques, research methods used to assess the activity of antimicrobial agents knows classical and instrumental methods used in pharmaceutical and technical microbiology. K\_W7
4. Has knowledge of natural, synthetic, and other raw materials used to remove or reduce the number of microorganisms. K\_W13
5. Has basic knowledge in the field of methods of assessment of antimicrobial activity of new medicinal substances, plant and synthetic medicine as well as biochemical and molecular gripping points, pharmacopoeial standards and norms related to pharmaceutical engineering, knows methods and techniques of researching medicinal products in terms of their antimicrobial activity. K\_W24

### Skills

1. Understands the biocide literature in Polish, reads and understands uncomplicated scientific and technical texts in a foreign language, is able to obtain information from literature, databases, and other sources related to pharmaceutical engineering, also in a foreign language, integrate, interpret and extract conclusions and form opinions. K\_U1
2. Based on general knowledge explains the basic phenomena associated with the action of various biocidal agents on microorganisms. K\_U2
3. Selects the appropriate methods and techniques in assessing the antimicrobial activity of biocides. K\_U11
4. Is able to plan simple experiments in the field of antimicrobial activity assessment of antimicrobial agents, interpret their results, and draw conclusions. K\_U12

### Social competences

1. Is ready to critically assess knowledge, understands the need for further education, supplementing specialized knowledge and raising his professional competences, understands the importance of knowledge in solving problems. K\_K1

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The basis for passing the seminars is the student's presence in class, participation in the discussion related to the discussed issues, preparing presentations in the scope of the material designated for discussion and obtaining from the colloquium (containing the test and open questions) a minimum satisfactory grade (min. 65% of correct answers).



Seminar grade will be issued according to the following score:

- 19.5 - 21 points - rating 3.0
- 21.5 - 23.5 points - grade 3.5
- 24 - 26 points - rating 4.0
- 26.5 - 27.5 points - rating 4.5
- 28 - 30 points - rating 5.0

### Programme content

Seminars:

1. Basic concepts related to antimicrobial activity and mechanisms of action on microorganisms of compounds of natural origin and obtained by chemical synthesis,
2. Compounds and substances with potential antimicrobial effect,
3. Compounds and substances with potential mutagenic and carcinogenic effects, Ames test assumptions,
4. Methods for assessing the antimicrobial activity of various compounds and substances,
5. Methods to evaluate preservatives.

### Teaching methods

1. Seminars: multimedia presentation, examples analysis, discussion, projects developed by students

### Bibliography

Basic

1. Hans G. Schlegel **Mikrobiologia ogólna** , PWN, 2008.
2. Krystyna Kowal, Zdzisława Libudzisz, Zofia Żakowska **Mikrobiologia techniczna. Tom 1 i 2** , PWN, 2008.

Additional

1. Urząd Rejestracji Produktów Leczniczych **FARMAKOPEA POLSKA XI** , Urząd Rejestracji Produktów Leczniczych, 2017.
2. Włodzimierz Kędzia **Mikrobiologia dla farmaceutów** , UM Poznań, 1994.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for classes, preparation for tests, project preparation) <sup>1</sup>	15	0,5

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