

## Course Syllabus

### I General Information

Course name in English	Preclinical studies on bioactive compounds
Course name in Polish	Badania przedkliniczne związków bioaktywnych
Programme	Bioanalytical technologies
Level of studies (BA, BSc, MA, MSc, long-cycle MA)	MSc
Form of studies (full-time, part-time)	Full-time
Discipline	Biological sciences
Language of instruction	English

Course coordinator/person responsible	Dr hab. Maciej Masłyk
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Type of class ( <i>use only the types mentioned below</i> )	Number of teaching hours	Semester	ECTS Points
lecture			28
tutorial			
classes			
laboratory classes			
workshops			
seminar	120	I , II, III, IV	
introductory seminar			
foreign language classes			
practical placement			
field work			
diploma laboratory	30	III	
translation classes			
study visit			

Course pre-requisites	Knowledge of topics from molecular biology and biochemistry fields
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## II Course Objectives

C1 – Obtaining knowledge regarding drug design
C2 - Acquiring knowledge and skills with drug evaluation techniques
C3 - Acquiring knowledge with key assays in evaluation of anti-cancer and anti-microbial compounds
C4 – Acquiring skills in biological results processing and presentation

## III Course learning outcomes with reference to programme learning outcomes

Symbol	Description of course learning outcome	Reference to programme learning outcome
<b>KNOWLEDGE</b>		
W_01	Knows the specific terminology used in drug design field	K_W01
W_02	Knows how to design an experiment for drug evaluation	K_W05
W_03	Has knowledge regarding drug candidate evaluation, its influence on living cells and molecular mechanisms of action	K_W02
W_04	Knows the fundamental principles of H&S, ergonomics and knows the rules regarding intellectual property	K_W07 K_W09
<b>SKILLS</b>		
U_01	Uses advanced techniques and research tools in the field of biochemistry and molecular biology	K_U01; K_U07; K_U15, K_U18
U_02	Is fluent in the scientific literature in the field of the subject of the master's thesis, reads with understanding complicated scientific texts in English	K_U02; K_U16; K_U17
U_03	Can critically select available information, including those from electronic sources, and formulate reasoned judgments on their basis	K_U03
U_04	Uses statistical methods to analyze and verify his experimental results	K_U04
U_05	Demonstrates the ability to prepare oral presentations on biochemical topics	K_U05, K_U19
U_06	Has the ability to write a thesis based on his own research	K_U06, K_U10
U_07	Can indicate in which areas of the economy the results of his research can be used	K_U11
U_08	Collects and interprets experimental data and on this basis formulates appropriate conclusions	K_U14
<b>SOCIAL COMPETENCIES</b>		
K_01	Demonstrates responsibility for the assessment of hazards arising from conducted research, knows how to plan work in safe conditions in the laboratory	K_K01, K_K02
K_02	Demonstrates care for the equipment and acts in accordance with safety principles	K_K03 K_K05
K_03	Resolves moral and ethical dilemmas related to the profession	K_K04

#### IV Course Content

Drug design in today's biotechnology. Different levels of biological research in bioactive compound testing. Analysis of the structure and activity of substances with antitumor and antimicrobial activity. Enzymes as molecular targets. Types of biological tests in the study of the activity of different substances. Analysis of biological results - positive and negative results. The usefulness and comparison of the High-throughput Virtual Screening technique and rational drug design.

#### V Didactic methods used and forms of assessment of learning outcomes

Symbol	Didactic methods <i>(choose from the list)</i>	Forms of assessment <i>(choose from the list)</i>	Documentation type <i>(choose from the list)</i>
<b>KNOWLEDGE</b>			
W_01 W_02 W_03 W_04	Research work under the supervision, discussion, laboratory analysis	Observation, implementation of the project, oral exam	Master thesis, protocol
<b>SKILLS</b>			
U_01	Laboratory classes		
U_02 U_03	Discussion, textual analysis	implementation of the project	Master thesis
U_04	Practical classes		
U_05	Textual analysis, discussion	Presentation	
U_06	Guided research	implementation of the project	
U_07	Textual analysis, discussion	implementation of the project	
U_08			
<b>SOCIAL COMPETENCIES</b>			
K_01 K_02 K_03	Laboratory classes	implementation of the project	Master thesis

#### VI Grading criteria, weighting factors

failed - absence from classes, lack of proper preparation for classes, no activity during classes. No master's thesis prepared.

passed - class attendance, preparation for classes, active participation in classes, participation in discussions. Master's thesis.

### VII Student workload

Form of activity	Number of hours
Number of contact hours (with the teacher)	<b>210 (150 + 60 individual consultation)</b>
Number of hours of individual student work	<b>490</b>

### VIII Literature

Basic literature
Drug Discovery and Evaluation: Pharmacological Assays, Hans Gerhard Vogel, 2008, Springer
Evaluation of Enzyme Inhibitors in Drug Discovery, Robert A. Copeland, 2013, Wiley
Drug Design, Klebe, Gerhard, 2013, Springer