

SYLLABUS
APPLICABLE TO THE EDUCATIONAL CYCLE 2023/24-2026/27
(extreme dates)
 Academic year 2025/26, 2026/27

1. BASIC INFORMATION ABOUT THE COURSE

Course/Module title	Diploma seminar
Course/Module code *	
Faculty (name of the unit offering the field of study)	Faculty of Exact and Technical Sciences
Name of the unit running the course	Faculty of Exact and Technical Sciences
Field of study	Diagnostic systems of medicine
Qualification level	First degree, bachelor
Profile	First degree, bachelor, General academic
Study mode	Stationary
Year and semester of studies	Year III, semester 6 Year IV, semester 7
Course type	Directional course: Diagnostic Equipment in Medicine
Language of instruction	English
Coordinator	Dr hab. Paweł Jakubczyk, prof. UR
Course instructor	Semester 6: dr hab. Paweł Jakubczyk, prof. UR, Dr. Sc. Matej Baláž – visiting professor; Semester 7: dr hab. Paweł Jakubczyk, prof. UR

* as agreed at the faculty

1.1. Formy zajęć dydaktycznych, wymiar godzin i punktów ECTS

Semester (no.)	Lectures	Classes	Colloquia	Lab classes	Seminars	Practical classes	Internships	others	ECTS credits
6					30				4
7					30				4

1.2. Course delivery methods

☒ conducted in a traditional way

☐ involving distance education methods and techniques

1.3 Course/Module assessment (exam, pass with a grade, pass without a grade)

pass without a grade

2. PREREQUISITES

KNOWLEDGE OF ISSUES FROM BASIC AND CORE COURSES INCLUDED IN THE FIRST-CYCLE STUDY PROGRAMME IN "DIAGNOSTIC SYSTEMS IN MEDICINE".

3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

3.1 Course/Module objectives

C1	Preparing the student for independent literature search related to a specific topic.
C2	Developing the ability to prepare and present the results of one's own research in written and oral form.
C3	Preparation of the diploma thesis by the student.

3.2 COURSE/MODULE LEARNING OUTCOMES

Learning Outcome	The description of the learning outcome defined for the course/module	Relation to the degree programme outcomes
LO_01	The graduate knows and understands phenomena, processes, theories and laws related to the application of physics in medicine and technology necessary to understand the principles of operation and use of selected diagnostic equipment for the diploma thesis.	K_Wo4
LO_02	The graduate knows and understands basic computational methods used to solve typical problems in physical and technical sciences, including practical implementations using appropriate IT tools, and has basic programming skills enabling calculations and plotting for the diploma thesis.	K_Wo5
LO_03	The graduate knows and understands concepts, theories and methods related to applications of physics in medicine and technology appropriate to the selected educational path.	K_Wo6
LO_04	The graduate is able to prepare a study presenting a problem analyzed within the diploma thesis concerning applications of physics in medicine and technology, and propose solutions including a preliminary economic assessment.	K_Uo5
LO_05	The graduate is able to prepare oral presentations and written papers in Polish or a foreign language concerning issues addressed in the diploma thesis, using basic theoretical concepts and various sources.	K_U11
LO_06	Ability to participate in debate, present and evaluate different opinions and positions, and discuss them.	K_U13
LO_07	The graduate is ready to understand social aspects of practical application of acquired knowledge and skills and related responsibility, as well as fulfilling social obligations.	K_Ko3

LO_o8	Ability to initiate activities aimed at popularizing knowledge related to applications of physics in medicine and technology.	K_Ko4
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3.3 Course content

Seminar

Content outline
Semester 6
Introduction to diploma seminar topics, presentation of example research problems for diploma theses. Discussion of stages of diploma thesis preparation and formal requirements.
Use of scientific databases (intellectual property protection and copyright).
Technical aspects of presenting scientific results and preparing a diploma thesis.
Presentation of selected topics in diagnostic systems in medicine, including: 1. Physical foundations of medical diagnostics (e.g. CT, MRI, EEG), Artificial intelligence in medicine, Medical data analysis – dr hab. Paweł Jakubczyk, prof. UR. 2. Mechanochemistry as an interdisciplinary field combining chemistry, nanomaterials, engineering, physics, biology, medicine and pharmacy - lecture by a visiting professor, Dr. Sc. Matej Baláž (in English).
Assignment of individual presentation topics.
Student presentations.
Selection of diploma thesis topics and presentation of a preliminary thesis outline.
Semester 7
Presentations related to diploma thesis topics.
Presentation of research results obtained during diploma thesis preparation.
Verification of literature selection and current state of knowledge.
Anti-plagiarism system and diploma examination rules. Multimedia presentation of the main thesis assumptions with group discussion.
Discussion of diploma examination problems.

3.4 Teaching methods

Seminar: text analysis with discussion, group work, presentations.

4. ASSESSMENT METHODS AND CRITERIA

4.1 Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes, ...)
LO_01	observation during classes, report	Seminar
LO_02	observation during classes, report	Seminar
LO_03	observation during classes, report	Seminar
LO_04	observation during classes, report	Seminar
LO_05	observation during classes, report	Seminar

LO_o6	observation during classes, report	Seminar
LO_o7	observation during classes,	Seminar
LO_o8	observation during classes,	Seminar

4.2 Course assessment criteria

Course completion will be assessed through presentations, class participation, and involvement in discussions. This will confirm the extent to which the student has achieved the intended learning outcomes. The verification of achieved learning outcomes is monitored continuously throughout the course.

Seminar – Assessment:

Semester 6: preparation and presentation of a paper on a given topic, active participation in the seminar, presentation of a preliminary plan for the diploma thesis.

Semester 7: presentation of the entire diploma thesis.

During each semester, the student must present the progress of their work at least twice.

5. Total student workload needed to achieve the intended learning outcomes – number of hours and ECTS credits

Activity	Number of hours
Scheduled course contact hours	60
Other contact hours involving the teacher (consultation hours, examinations)	5
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	135
Total number of hours	200
Total number of ECTS credits	8

* One ECTS point corresponds to 25-30 hours of total student workload

6. Internships related to the course/module

Number of hours	-
Internship regulations and procedures	-

7. Instructional materials

Compulsory literature:

Individually selected literature appropriate to student presentations and diploma theses.

Complementary literature:

1. Pułło A., Prace magisterskie i licencjackie. Wskazówki dla studentów, Wyd. Prawnicze PWN, Warszawa 2001.

2. Zenderowski R., Technika pisania prac magisterskich i licencjackich, CeDeWu, Warszawa 2020.
3. Wojciechowska R., Przewodnik metodyczny pisania pracy dyplomowej, Difin, Warszawa 2010.
4. Weiner J., Technika pisania i prezentowania przyrodniczych prac naukowych, PWN, Warszawa 2009.
5. Dobre obyczaje w nauce. Zbiór zasad i wytycznych. Komitet Etyki w Nauce przy Prezydium PAN, Warszawa 1994.
6. Baláž M., Environmental Mechanochemistry. Recycling Waste into Materials using High-Energy Ball Milling, Springer Nature Switzerland AG, Cham 2021.

Acceptance by the Head of the Unit or an authorized person