A COURSE SYLLABUS – DOCTORAL SCHOOL

REGARDING THE QUALIFICATION CYCLE FROM 2025/2026 TO 2028/2029

GENERAL INFORMATION ABOUT COURSE	
Course title	**DOCTORAL SEMINAR**
Name of the unit running the course	Rzeszów University Doctoral School
Type of course *(obligatory, optional)*	compulsory subject
Year and semester of studies	years I-IV, semesters: I-VII
Discipline	**Medical sciences**
Language of Course	Polish/English
Name of Course coordinator	**Marta Kopańska, MD, PhD, Professor at the University of Rzeszów**
Name of Course instructor	**Marta Kopańska, MD, PhD, Professor at the University of Rzeszów**
Prerequisites	Academic education at the master's degree level. Knowledge, skills and social competences at level 7 of the Polish Qualifications Framework. Foreign language proficiency at level B2.

BRIEF DESCRIPTION OF COURSE
(100-200 words)

The aim of the doctoral seminar is to support doctoral students in planning, conducting and interpreting scientific research carried out as part of their dissertation. The seminar focuses on deepening theoretical and methodological knowledge in the field of neurophysiology, neuropsychology and neurodevelopmental disorders, with particular emphasis on ADHD and electroencephalographic methods (QEEG).

During the course, doctoral students develop skills in critical analysis of scientific literature, formulation of research problems and hypotheses, and selection of appropriate research methods. Particular attention is paid to the analysis of brain activity patterns and the interpretation of neurophysiological data obtained using quantitative electroencephalography.

The doctoral seminar enables the systematic presentation of doctoral thesis progress, discussion of research results and preparation of scientific publications and conference presentations, as well as the development of communication and ethical competences, which play an important role in research work.

COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES

Learning outcome	The description of the learning outcome defined for the course	Reference to learning outcomes for qualifications at Level 8 of the Polish Qualification Framework (PRK) (symbol)	Learning Format (Lectures, classes,...)	Method of assessment of learning outcomes (e.g. test, oral exam, written exam, project,...)
Knowledge: (no.)	***knows and understands***			
P8S_WG1	They have extensive theoretical knowledge, supported by research experience, and are familiar with current scientific achievements, including global ones, in the	**P8S_WG**	seminar	oral presentation, discussion

	field of education in the scientific discipline: medical sciences, as well as general issues in related disciplines, in the field of research interests to a degree that allows for the confirmation or refutation of existing paradigms.			
P8S_WG2	Knows the directions of scientific research development in the scientific discipline: medical sciences and the latest discoveries, including global ones, in the discipline in which education takes place.	**P8S_WG**	seminar	oral presentation, discussion
P8S_WG3	Knows, understands and is able to apply concepts used by scientists and specialists in the discipline: medical sciences and disciplines in their native and foreign languages, which are leading in the discipline.	**P8S_WG**	seminar	oral presentation, discussion
Skills: (no.)	***is able to***			
P8S_UW1	Based on their knowledge in various fields of science, they are able to identify and solve scientific research problems, define the objective, formulate a hypothesis and the subject of scientific research, select and improve research techniques, methods and tools, and draw conclusions based on the results of scientific research.	**P8S_UW**	seminar	oral presentation, discussion
P8S_UW2	They are able to select and use available scientific literature to diagnose and solve research problems and innovative activities in their research work, as well as apply the appropriate tools to create new elements of scientific output.	**P8S_UW**	seminar	oral presentation, discussion
P8S_UW3	Using their interdisciplinary knowledge to analyse and evaluate the results of scientific research, expert work and other scientific studies, they are able to formulate opinions, including critical judgements.	**P8S_UW**	seminar	oral presentation, discussion, written assignments
P8S_UK6	They are able to speak in public to present the results of scientific research and participate in discussions on scientific, social and professional topics in an international environment, using a foreign language at level B2 of the Common European Framework of Reference for Languages.	**P8S_UK**	seminar	oral presentation,
Social competence: (no.)	***is ready to***			
P8S_KK1	Is prepared to critically evaluate achievements within the scientific discipline of medical sciences and to critically evaluate	**P8S_KK**	seminar	oral presentation, discussion,

	the contribution of their own research results to the scientific development of the discipline in which they are studying.			
P8S_KK3	Thanks to their extensive knowledge, solves various cognitive and practical problems.	**P8S_KK**	seminar	oral presentation, discussion, written assignments

LEARNING FORMAT – NUMBER OF HOURS

Semester (no.)	Lectures	Seminars	Lab classes	Placements	other	ECTS
I - VII	-	-	-	-	**7 x 15 godz. -105 godz.**	**7 x 2 ECTS – 14 ECTS**

METHODS OF INSTRUCTION

- ACADEMIC DISCUSSION**,**
- STUDY OF ACADEMIC LITERATURE**,**
- MULTIMEDIA PRESENTATION**,**
- PREPARATION AND PRESENTATION OF RESEARCH OBJECTIVES**,** ***RESEARCH METHODS*****,** ***RESEARCH RESULTS*****,**
- FINAL PROJECTS**,**
- PROGRESS IN THE PREPARATION OF A DOCTORAL DISSERTATION

COURSE CONTENT

Semester I
Topic 1: Attention deficit hyperactivity disorder (ADHD) from a clinical, neurobiological and neuropsychological perspective.
Topic 2: Basic information about electroencephalography and quantitative electroencephalography. The use of these tools in clinical practice.
Topic 3: Review of current scientific literature on the neurobiological and neurophysiological basis of ADHD.
Semester II
Topic 1: Specificity of research methodology using quantitative electroencephalography in children and adults.
Topic 2: Brain activity patterns in ADHD – EEG band analysis.
Topic 3: Familial and genetic correlates of brain functioning in neurophysiological studies.
Semester III
Topic 1: Designing your own research: objectives, hypotheses, study group.
Topic 2: Research procedures and ethics in studies involving children and families.
Topic 3: Introduction to QEEG data analysis.
Semester IV
Topic 1: Comparative analysis of QEEG patterns in children with ADHD and their parents.
Topic 2: Statistical methods used in scientific research.
Topic 3: Interpretation of results in the context of family correlates of ADHD.
Semester V
Topic 1: Discussion of research results in the context of the literature on the subject.
Topic 2: Methodological limitations of QEEG research.
Topic 3: Preparation of a scientific publication – structure and standards.
Semester VI
Topic 1: Presentation of research results at scientific conferences.
Topic 2: The role of research on family correlates in the diagnosis and treatment of ADHD.
Topic 3: Editing a doctoral dissertation – methodology and results.
Semester VII
Topic 1: Final interpretation of research results.
Topic 2: Practical implications of research results and prospects for further research directions.

Topic 3: Preparation for the defence of the doctoral dissertation.

COURSE ASSESSMENT CRITERIA
The assessment covers the doctoral student's continuous work in each semester and academic year in the following areas: conducting research, expanding knowledge, studying literature, commitment and progress in preparing the doctoral dissertation. The course ends after each semester of implementation: pass – pass, fail – fail. The following percentage of points obtained is used to assess the course: - up to 60% - fail - the doctoral student is not making progress in scientific research, is not expanding their knowledge, is not studying the literature, is not participating in substantive discussions, is not fulfilling their scientific obligations; - 61% - 100% - pass - the doctoral student is making progress in scientific research, expanding their knowledge, studying basic and supplementary literature, participating in substantive discussions, fulfilling all scientific duties.

TOTAL DOCTORAL STUDENT WORKLOAD REQUIRED TO ACHIEVE THE EXPECTED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS	
Activity	Number of hours
Scheduled course contact hours	**7 x 15 hrs. – 105 hrs.**
Other contact hours involving the instructor (duty hours, examinations)	**6**
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	**309**
Total number of hours	**420**
Total number of ECTS credits	**7 x 2 ECTS – 14 ECTS**

INSTRUCTIONAL MATERIALS	
Compulsory literature:	1. Pąchalska, Maria; Kropotov, Juri D.; Kaczmarek, Bożydar L.J.. Neuropsychologia kliniczna. Red. . Warszawa: Wydawnictwo Naukowe PWN, 2014, 570 s. ISBN 978-83-01-19148-1 2. Borkowska, A. R., & Domańska, Ł. (red.) (2011). Neuropsychologia kliniczna dziecka. Warszawa: PWN. 3. Wolańczyk, T., Kołakowski, A., Skotnicka, M. (2015). ADHD – zespół nadpobudliwości psychoruchowej. Warszawa: PZWL
Complementary literature:	1. Kopańska, M. i Trojniak, J. (2025). Od aberracyjnych fal mózgowych do zmienionej plastyczności: przegląd biomarkerów QEEG i neurofeedbacku w neurobiologicznym krajobrazie ADHD. Cells , 14 (17), 1339. https://doi.org/10.3390/cells14171339

	2. Kopańska, M., Ochojska, D. B., & Dejnowicz-Velitchkov, A. (2021). Diagnosing ADHD using QEEG and planning EEG-biofeedback (Neurofeedback) therapy – pilot studies. Medycyna Ogólna i Nauki o Zdrowiu, 27(2), 205–212. https://doi.org/10.26444/monz/131993 3. Kopańska, M., Ochojska, D., Sarzyńska, I., Trojniak, J., Banaś-Ząbczyk, A., Szczygielski J. (2025). The Use of Quantitative Electroencephalography (Eyes Closed)to Assess the Effectiveness of Neurofeedback in Therapy in Children with Mild Autism Spectrumdisorders that Reveal Attention Deficit Disorders Acta Neuropsychologica, 23(1), 27-46. https://doi:10.5604/01.3001.0054.9911 4. Kopańska, M., Ochojska, D., Sarzyńska, I., Bartkowska, O., & Szczygielski, J. (2025). Quantitative and qualitative electroencephalography in the diagnosis and monitoring of depression. A modern approach to clinical neurophysiology. Frontiers in human neuroscience, 19, 1624434. https://doi.org/10.3389/fnhum.2025.1624434 5. Kopańska, M., Ochojska, D., Sarzyńska, I., Trojniak, J., & Szczygielski, J. (2025). Exploratory quantitative EEG characteristics in children with autism spectrum disorder. Frontiers in psychiatry, 16, 1689000. https://doi.org/10.3389/fpsyt.2025.1689000 6. Kopańska, M., Ochojska, D., Trojniak, J., Sarzynska, I., & Szczygielski, J. (2024). The role of quantitative electroencephalography in diagnostic workup of mental disorders. Journal of physiology and pharmacology : an official journal of the Polish Physiological Society, 75(4), 10.26402/jpp.2024.4.02. https://doi.org/10.26402/jpp.2024.4.02 7. Kopańska, M., Rydzik, Ł., Błajda, J., Sarzyńska, I., Jachymek, K., Pałka, T., Ambroży, T., & Szczygielski, J. (2023). The Use of Quantitative Electroencephalography (QEEG) to Assess Post-COVID-19 Concentration Disorders in Professional Pilots: An Initial Concept. Brain Sciences, 13(9), 1264. https://doi.org/10.3390/brainsci13091264

***(1 ECTS POINT CORRESPONDS TO 25–30 HOURS OF TOTAL WORK BY THE DOCTORAL STUDENT REQUIRED TO ACHIEVE THE INTENDED RESULTS)**

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Date and signature of the Course instructor

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Approved by the Head of the Department or an authorised person