Below you will find a list of master's seminars along with their brief description and the number of available slots. Registration for the master's seminars for the first year of master's studies in Research in Cognitive Science will be based on the master's thesis projects you submit during recruitment.

**1**  (number of participants: 4)
**dr Szymon Chlebowski**, szymon.chlebowski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> Logic, non-classical logics, applications of logic in cognitive science, philosophy of science and epistemology, philosophy of technology, AI ethics

**2**  (number of participants: 3)
**dr hab. Maciej Hanczakowski, prof. UAM**, maciej.hanczakowski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> The seminar concerns memory processes involved in learning and remembering educationally-relevant materials. While working on their thesis, students will conduct studies evaluating various techniques that have the potential of improving the efficacy of learning, including retrieval practice with and without feedback, spacing of practice sessions, variable encoding and retrieval, or interleaving study topics. These techniques will be applied to learning new information such as (but not limited to) foreign language vocabulary or textbook materials. The theses will be prepared in English.

**3**  (number of participants: 1)
**dr inż. Marcin Jukiewicz**, marcin.jukiewicz@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> The subject of the seminar is the practical applications of machine learning and the utilization of Large Language Models in education. It will explore how machine learning algorithms can be applied to real-world problems, enhancing processes and decision-making across various industries. Additionally, the seminar will delve into the transformative potential of Large Language Models in educational settings, examining their role in personalized learning, automated assessment, and the development of interactive educational tools.

**4**  (number of participants: 1)
**dr hab. Łukasz Kaczmarek, prof. UAM**, lkacz@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> **Positive psychological aspects of new technologies**
> I propose projects on gaming, streaming, psychological aspects of human interaction with artificial intelligence, and other new technologies (excluding social media). Particular emphasis will be placed on social and emotional phenomena. In line with positive psychology, I propose focusing on positive aspects important for health and well-being, much less explored by science.

**5** (number of participants: 4)
**dr hab. Paweł Kleka**, pawel.kleka@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> I invite those interested in psychological research methods to participate in a seminar focused on the applications of artificial intelligence in psychology and psychometrics. Our discussions will explore how AI-driven tools can enhance research practices, improve measurement validity, and address key methodological challenges in the field.
>
> During the seminar, we will examine how AI can assist in tackling publication bias, the replication crisis, hypothesis testing, and the interpretation of results. We will also critically assess the limitations of AI-based methods and their implications for psychological knowledge.
>
> This seminar is designed for students who want to deepen their understanding of methodology, psychometrics, and the philosophy of science while also exploring how AI can support and challenge traditional research approaches. We will reflect on the potential of machine learning, natural language processing, and other AI-driven techniques to advance psychological assessment, prediction, and data analysis.
>
> Master's theses emerging from the seminar should focus on practical problem-solving using AI-based approaches, drawing on various data sources and methods, including meta-analyses, large-scale datasets, non-classical statistical techniques, and experimental studies.

**6** (number of participants: 1)
**prof. dr hab. Michał Klichowski**, michal.klichowski@amu.edu.pl,
*Cognitive Neuroscience Center AMU*

> **Topics discussed at the seminar:**
>
> Neurotechnology-enhanced home learning has recently gained popularity, mainly using binaural beats or tDCS brain stimulation. However, the impact of binaural beats or tDCS on learning has yet to be studied in conditions other than laboratory, except for one binaural beats study. Thus, urgent questions are raised about what effects home-use binaural beats or tDCS causes. Positive? Neutral? Or even negative? And if it is positive, is it not a placebo effect? During the seminar, you will participate in part of the world's first series of experiments aimed at answering these questions. For more details, see the first paper which begins this cycle: `https://doi.org/10.1038/s41598-023-38313-4`

**7** (number of participants: 2)
**dr Barbara Konat**, barbara.konat@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> Topics discussed at the seminar: In this seminar, we explore how human communication functions, with a particular focus on emotions in language, argumentation, and pragmatics. The approach is primarily computational, with the use of methods from natural language processing (NLP) and language modeling. Possible research topics include: - Emotional appeals in public debates across multiple languages (human and LLM-based annotation), - Persuasion strategies in online and offline communities,- Emotions in social media and their role in online discourse, - Fine-tuning and augmented prompting of large language models for conversation analysis, - Statistical and corpus-based methods for analyzing communication patterns in large datasets.
>
> Students with experience in language analysis, whether through manual methods (e.g., annotation, conversation analysis) or computational techniques (e.g., NLP), are welcome. Those with basic Python skills who wish to develop expertise in NLP and AI will receive guidance. Students without programming experience but with well-defined research plans related to language analysis are also encouraged to apply. Please note: this seminar does not cover psycholinguistic experiments involving human participants.

**8** (number of participants: 2)
**dr hab. Marek Kowalczyk, prof. UAM**, marek.kowalczyk@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> Cognitive control. Determinants, mechanisms, and consequences of mind-wandering. Individual differences in mind-wandering. Cognitive failures.

**9** (number of participants: 2)
**prof. dr hab. Grzegorz Króliczak**, krolgreg@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> • Functional neuroimaging and/or neurostimulation as methods for probing cognitive processing / mechanisms • Phenotypes of functional brain organization (e.g., for different skilled actions -praxis/motor control, and language tasks) • Cerebral polymorphisms for praxis, language, and other cognitive skill representations, as a function of handedness and/or sex • New approaches to interactive, reproducible, and efficient neuroimaging data analyses, including deep learning algorithms (and/or artificial intelligence, AI)
>
> Students are encouraged to get involved in research projects directly linked to the supervisor's expertise. Being familiar with main topics, theoretical and methodological approaches used in recent and/or the most important papers from the supervisor's laboratory helps to pre-select a research area suitable for you. Within the supervisor's interests, the thesis topic will be matched both to the skills and strengths of the student(s). While theses can be exclusively 'analytical' and/or 'methodological' (e.g., by using a new method to the analysis of the already acquired neuroimaging data), running novel "behavioral" experiments (supported by neurostimulation, eyetracking or other methods utilized/available in the lab) is also possible and encouraged. Research-focused students (including the ones who are interested in later completing a PhD, at our institution or elsewhere) become co-authors of manuscripts written by their supervisor and/or more experienced colleagues. As a part of their training, students are expected to deliver presentations at departmental seminars and science conferences, e.g., at meetings of national societies.

**10** (number of participants: 2)
**dr hab. Dorota Leszczyńska-Jasion, prof. UAM**, dorota.leszczynska@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> Topics covered in the master's seminar lie within the following areas: • proof theory, • non-classical logics, with an emphasis on modal logics, • logics of questions, with an emphasis on inferential erotetic logic, • computational and implementation approaches to logical issues

**11** (number of participants: 2)
**prof dr hab. Krzysztof Łastowski**, krzysztof.lastowski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> • Evolutionary Foundations of Human Cognition: Comparing Lamarckian and Darwinian mechanisms in the evolution of the human species. • Evolutionary Epistemology: Understanding the cognitive dispositions of the human species. • Human Ethology: Exploring ethological universals and their impact on the cognitive dispositions of the human species. • Evolutionary Cognitive Science: Investigating the evolutionary determinants of human cognitive processes relative to animal species. • Edward O. Wilson's Concept of Human Nature: Examining the concept of human nature as proposed by Edward O. Wilson and the factors determining human cognition. • Cross-disciplinary Methodological and Theoretical Connections: Linking cognitive science with other disciplines of human research, such as anthropology, ethology, evolutionary psychology, sociobiology, and the epigenetic approach.

**12** (number of participants: 1)
**dr Natalia Nowaczyk**, natalia.nowaczyk@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> • analysis of structural changes in the brain  • diffusion tensor imaging  • cognitive functions in clinical groups (eg. ADHD, alcohol use disorder, behavioral addiction, depression, stroke)  • role of temperament

**13** (number of participants: 2)
**dr Krzysztof Piątkowski**, krzysztof.piatkowski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> I specialize in investigating working memory and its interactions with long-term memory. Students enrolled in the seminar will have the opportunity to employ experimental methods, backed by mathematical modelling, to study various memory-related subjects, including the effects of distraction on memory, the processes of unintentional learning, and the effects of using verbal labels to support visual memory.

**14** (number of participants: 1)
**dr hab. Adam Pomieciński, prof. UAM**, adam.pomiecinski@amu.edu.pl,
*Department of Anthropology and Ethnology AMU*

> **Topics discussed at the seminar:**
>
> Suggested thematic areas:  • cognitive approach to culture and society  • cognitive anthropology  • world ethnology (particularly the regions of Africa and the South Caucasus)  • contemporary cultural transformations.

**15** (number of participants: 8)
**dr Łukasz Przybylski**, lukasz.przybylski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> • Philosophical and cognitive theories of perception:  • Embodied and situated cognition.  • Body perception - body schema and body image.  • Visual perception.  • Auditory perception.  • Haptic perception.
>
> *Applications of cognitive science:*  • Ecological psychology – theory of affordances.  • Universal design as a tool of the extended mind.  • User experience design.  • Design thinking and creative thinking.  • Tools of cognitive science in education and development.

**16** (number of participants: 2)
**dr hab. Mariusz Urbański, prof. UAM**, mariusz.urbanski@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> • Empirical case studies of problem-solving: Investigate how individuals or groups approach, analyze, and resolve complex problems in real-world or experimental settings.  • Empirical studies of abductive reasoning: Explore the processes through which individuals generate and evaluate hypotheses to account for the observed phenomena, focusing on real-world applications or experimental contexts.  • Theory and practice of rationality: Analyze and evaluate frameworks of rationality and decision-making processes and their applications in diverse contexts.  • Moral reasoning: Explore how humans approach ethical dilemmas and justify moral decisions.  • The interplay between logic, cognitive science, and the psychology of reasoning: Examine the shadowy borderlands between these disciplines, considering both empirical studies and theoretical perspectives.
>
> You are encouraged to propose your own ideas related to these themes. Be fascinated by your topic of choice; this will make the whole journey much more exciting.

**17** (number of participants: 2)
**dr Małgorzata Wrzosek**, malgorzata.wrzosek@amu.edu.pl,
*Faculty of Psychology and Cognitive Sciences AMU*

> **Topics discussed at the seminar:**
>
> This seminar offers an opportunity to explore and deepen understanding of the following topics:
>
> • "The second brain" in the context of cognitive functioning. • Gut microbiota and mental functioning. • Tinnitus – therapy and research. • Auditory illusions. • Embodied cognition in sport. • Embodied auditory cognition.
>
> Students are also invited to present their own ideas related to these topics.