Training and Outcome Requirements of the Master's Programme in Psychobiology

Qualification awarded upon completion of the Master's programme: Psychobiologist

Classification of the Master's programme:

- Classification by field of education: Medical and Health Sciences
- Classification by level of qualification:
    - Master's degree (Master of Science, MSc)
    - ISCED 2011 level: 7
    - European Qualifications Framework (EQF): level 7
    - Hungarian Qualifications Framework (HuQF): level 7

- ISCED-F 2013 classification of the field of study: 0912

Orientation of the programme: Theory-oriented (60–70%)

Duration of the programme: 4 semesters

Total number of credits required for graduation: 120 credits

Programme objectives, professional competencies, and learning outcomes:

The aim of the program is to train professionals at the interface of psychology and biomedical sciences, providing an interdisciplinary curriculum supported by up-to-date scientific knowledge and extensive hands-on research experience. Students gain a solid understanding of the structure and function of the nervous system and the mechanisms underlying human behaviour. Training places a strong emphasis on electrophysiology, supplemented by neuroimaging and clinical research applications. Students have the opportunity to participate in studies involving both healthy individuals and patients with psychopathology, developing practical competencies essential for contemporary research.

This program is ideal for graduates in psychology, medicine, and the life sciences, as well as applicants with backgrounds in biophysics or medical engineering who wish to pursue research-oriented careers.

Career opportunities: Graduates are well-prepared for positions in academic laboratories, biotechnology and health-tech environments, and clinical research settings (clinical research manager, data scientist).

Graduates of the Psychobiology MSc can continue their studies at the Ph.D. level.

Professional competencies, and learning outcomes:

a. Knowledge

- Knowledge of the structural organization and anatomy of the central and autonomic nervous systems
- Basic developmental biology (including ontogenetic and phylogenetic aspects)
- Advanced knowledge of behavioral physiology
- Characteristics, advantages, and limitations of research methods used in psychobiology
- Behavioral physiological foundations of psychopathological phenomena
- In-depth knowledge of the effects of drugs and other active substances on behavior and psychological processes
- Evolutionary-based behavioral physiology models and knowledge
- Knowledge of applied mathematical aspects underlying psychophysiological methods, including computer-based data processing, programming, advanced statistical knowledge, and the potential applications of computational methods (e.g., deep learning, AI, language models, neural networks)
- Basic neuropsychiatric knowledge and neuropsychological assessment methods

b. Skills

- Analyse and interpret neuroanatomical and neurophysiological relationships, critically examine the biological foundations of animal and human behaviour, evolutionary and genetic factors, their interactions, and adaptive functions
- Interpret and investigate the physiological background of mental and cognitive processes (e.g. mood, emotion, memory, attention, decision-making) and apply research methods critically
- Analyse developmental characteristics of the nervous system and evaluate the role of animal models in psychobiological research
- Integrate and apply knowledge related to the biological background, diagnostic approaches, and therapeutic options of neurological and psychiatric disorders
- Apply research procedures commonly used in psychobiology
- Effective and systematic search of scientific literature and its critical evaluation

- Critical analysis of psychological phenomena in terms of biological mechanisms and within a biomedical context, as well as knowledge of psychology, biology, neuroscience, cognitive science, and their interconnections
- Ability to design experiments/studies, analyze data, interpret findings, write scientific papers and reports, create data visualizations, and present research results
- Critical thinking in the evaluation of results, recognition of patterns and relationships, formulation of hypotheses, generation of new research questions, and development of creative solutions

c. Attitudes

- critical: critically evaluate scientific claims and recognize their empirical foundations, strengths, and limitations
- rational: drawing conclusions based on logical reasoning and scientifically validated evidence
- committed to renewal and continuous improvement: receptiveness to new research directions, methods, and theoretical frameworks
- curious: interest in deeper underlying mechanisms of phenomena, formulation of questions, and pursuit of scientific explanations
- persistent: ability to work consistently toward long-term research goals and overcome obstacles
- creative/innovative: develop novel approaches and apply existing methods in innovative ways
- self-critical and inclined toward reflection: conscious reflection on own thinking, decisions, and their scientific grounding
- open to mathematical formalization and driven by quantification/data: striving for quantitative descriptions of psychobiological processes and evidence-based reasoning
- open to interdisciplinary collaboration: effective communication and cooperation with experts from other scientific fields

d. Autonomy, and responsibility

- Independently and responsibly designs and co-directs psychological and behavioral physiology research projects
- Expresses opinions independently, with professional grounding and a clear sense of responsibility
- Plans their own professional development autonomously

- Takes responsibility for their own work and for the work of students and colleagues under their supervision
- Based on their professional knowledge and awareness, is capable of independently analyzing and interpreting emerging professional questions
- Initiates and conducts responsible, rational, and evidence-based discussions with professionals from related disciplines
- Is committed to professional principles and takes responsibility for the reliability of the knowledge they generate (ensuring objective, reproducible scientific results)
- Is dedicated to upholding research ethics, takes responsibility for adherence to ethical standards—especially in human and animal studies—and considers the social and moral implications of research findings
- Understands the importance of science communication (presenting research results in an accessible manner) and, as a member of the scientific community, takes responsibility for addressing misconceptions, pseudoscientific theories, and misleading narratives in psychology and biology

Professional characteristics of the programme, fields of study leading to the qualification, and their credit distribution

Psychobiology: 8 credits

Neuroanatomy and Neurophysiology: 8 credits

Cognitive Neuroscience: 4–10 credits

Behavioural Science: 2–12 credits

Psychiatry: 10 credits

Research Literacy and Ethics: 6–9 credits

Mathematical and Algorithmic Foundations: 12 credits

Seminars in Psychobiology: 12 credits

Laboratory Practice: 12 credits

Master's Thesis: 27 credits

Elective courses: 6 credits

Requirements for professional practice and practical training

Professional practice consists of supervised work conducted within research groups or healthcare institutions engaged in research activities, in accordance with the curriculum of the programme.

Distinctive features of the programme

The programme is a research-oriented training with a strong emphasis on behavioural physiology. It is distinguished from cognitive neuroscience master's programmes by the extensive biomedical expertise and context available within a medical university environment.