

## **University graduate study programme Biology and Chemistry Education**

### **Master in Biology and Chemistry Education (mag. educ. biol. et chem.)**

**Learning outcomes of the study programme relative to legislative acts, requirements of applicable professional associations, demands of the labour market, possibilities for continuation of education and general social needs**

- 1) Relate the structure and function of the human organism with the structure and function of other groups of the living world during evolutionary development by applying comparative approach and integration of biological knowledge.
- 2) Relate the complexity of the structure with the development of new properties in different groups of the living world based on the analysis of phylogenetic relationships and the influence of living conditions on the development of adaptations and biodiversity.
- 3) Integrate the knowledge about the importance of cycling of matter and flow of energy for the regular functioning and survival of organisms, taking into account nutritional relationships in the biosphere.
- 4) Systematize the arguments regarding the importance of maintaining a balanced state in nature and the environment, and the causes of its disruption with regard to abiotic and biotic environmental conditions as well as one's own behavior and responsibility in accordance with sustainable development.
- 5) Apply fundamental chemical concepts when interpreting changes and processes in more complex systems.
- 6) Predict the properties and chemical reactivity based on the structure of the chemical compound.
- 7) Analyze the changes in structure, energy and kinetics during chemical, biochemical, and physical processes.
- 8) Prepare implementation of teaching and learning activities in biology and chemistry by setting clear and measurable learning and assessment goals aligned with the subject curricula.
- 9) Conduct an independently designed biology and chemistry lessons, integrating professional knowledge of biology and chemistry, and modern scientific, pedagogical, psychological, and didactic knowledge, and the requirements of the subject methodology.
- 10) Demonstrate knowledge and understanding of theories and methods of teaching biology, chemistry, and educational sciences (pedagogy and didactics).
- 11) Use independently and responsibly information and communications technology, and literature in teaching and everyday work, as well as in writing up and presenting professional work.
- 12) Demonstrate ability to work in the educational system and school, and to communicate and cooperate with the participants of the educational system.
- 13) Take responsibility for their own learning, lifelong education and further professional development, follow the development of new knowledge in biology, chemistry and education and apply it in teaching.
- 14) Take personal and team, social and ethical responsibility in strategic decision-making during and after the execution of tasks in predictable and unpredictable conditions of the educational process.

15) Independently plan, perform, and interpret school experiments in biology and chemistry applying safety measures during work as well as rules for analyzing and interpreting results in accordance with the preparation of the implementation of the subject curriculum.

16) Apply acquired knowledge to model and solve higher-level biological and chemical problems.

17) Critically evaluate and select scientifically correct concepts, assumptions, data, results and arguments.

18) Conduct independently designed research and/or project in teaching, including processing and interpreting results from biology and chemistry, integrating the application of suitable mathematical and statistical methods, and information and communications technology.

19) Apply basic rules of safe work by independently using standard research methods when performing more complex experiments, laboratory procedures and field investigations.