ITMO University

Logic and Methodology of Science

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Credit

Course Objectives: This course addresses the methodology of organizing high-quality scientific research processes in a field of information security. It is designed to study all stages of scientific research process and their specific, paying special attention to the information security aspects. It covers the existing best practices in planning, executing and finalizing of scientific research process. This course is concerned with scientific research process organization and research results publication.

Course structure:

1. Basic of science research logic and methodology.

1.1. Logic and methodology of science as an academic discipline and a way of getting new knowledge of the World
1.2. Classical and modern concepts of the science. Classification of sciences. Natural, social sciences, humanities, technical sciences. Genesis of scientific knowledge
1.3. Rationality in the science research. Logic as a science and logic in the science research. The logic of scientific reasoning
1.4. Natural and artificial intelligence. Personal characteristics and the role of a researcher in the field of technical sciences. Fundamentals of scientific communication

2. Logical and methodological approaches of science research organization.

2.1. Research and development activity and forms of its implementation. Engineering sciences as a form of implementation of scientific research in the technological and digital spheres. Formation of technical sciences: historical, cultural and philosophical foundations, main stages and structure
2.2. Priority areas for the development of science and technology in the context of digitalization. Integration of scientific, technical and engineering activities: processes and results.
2.3 Logical and methodological foundations and approaches of the scientific work implementation

2.4 Individual research work of undergraduates