iTMO

ITMO University

Seminar on Software Systems, Technologies and Security

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

This course addresses the methodological bases for conducting practical research on information security. The students will go through the main stages of the research from literature analysis and preparation of research paper to practical research (in the course work) for developing necessary skills in cyber security using modern and cutting-edge methods.

Course structure:

1. Methodological bases for conducting practical research in the field of information security

1.1. Features of the subject area of research. Types of scientific research: theoretical and experimental. Levels of scientific research: empirical, theoretical, metatheoretical, experimental-theoretical. Goals and objectives of theoretical research. Mathematical methods in research. Classification, types of experiments, processing of experimental results. The current state of the theory and practice of the subject area chosen for the dissertation research (ProDI); Main sources of information ProDI; Main factors determining the development of ProDI; Leading researchers and research groups (schools) that determine the advanced level of development of ProDI; Methods and means of scientific and applied research ProDI.

2. The main stages of planning and execution of the study

2.1. Search for solutions to similar problems in theory and practice. Literature analysis and formulation of own approach to solving the problem. Analytics of the internal and external environment. own solution to the problem. Formulation of research problems. Development of specific algorithms (methods) for solving domain problems. Criteria for evaluating the work: the correctness of the goals and objectives of the work; the accuracy of the title and the completeness of the disclosure of the stated topic; compliance of the title, stated goals and objectives with the content of the work, the validity of the choice of topic, the relevance of the research topic, the logic of the research; sequence and titles of sections,

chapters, paragraphs and subparagraphs; the quality of the design of the introduction and conclusion of the work, the organic nature of the work: the relationship between the parts of the work, the theoretical and practical aspects of the study.

2.2. The quality of the content of the work: the ability to identify, understand and correctly state a certain problem, offer options for solving it; independence shown in the processing and analysis of the studied literature, i.e. lack of significant volumes of direct citation; absence of factual, logical, spelling and grammatical errors; adherence to the style of scientific work; the relevance of the content.

3. Work with scientific literature and preparation of scientific publications

3.1. Note-taking, structuring the text of a scientific work. Analytical review of literature. Formulation of own methods, models, approaches, research questions and hypotheses. The structure of the scientific publication: the formulation of the problem, the degree of knowledge and the author's assessment of the degree of knowledge of the problem under study, possible hypotheses for solving the problem, the author's argumentation in connection with the chosen problem, the practical results of applying the author's approach, conclusions, a list of references.

4. Presentation of the research results

4.1. Presentation of research results. Structure of the report: title of the work, substantiation of the relevance of the work, the purpose of the work, the scientific problem of the study, the systematization of known solutions to the problem and their shortcomings, the main results and provisions. Scientific novelty of the results, practical significance of the work, implementation of developments, prospects for further research, conclusion on the work as a whole.