APPROVED by

the Academic Council

of the Faculty of Social Sciences

NRU HSE

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**Regulations**

**for Final Interdisciplinary Examination of Students of**

**the Master’s Programme “Applied Statistics with Network Analysis”**

**at National Research University Higher School of Economics**

1. **EXPLANATORY NOTE**

A role of the Final Interdisciplinary Examination at the master's programme "Applied Statistics with Network Analysis" plays a practical project. In the course of the project, students must demonstrate the ability to apply their knowledge and competences acquired in the learning process on the Master’s Programme in data analysis and applied statistics.

1. **GENERAL REQUIREMENTS FOR THE PROJECT**

2.1. Project is the mandatory element of the Master’s Programme. It is a format of the research or prectical project. The Project defense is a mandatory part of the State Final Examination. The Project plays a role of a Final Interdisciplinary Examination of students of the Master’s Programme “Applied Statistics with Network Analysis”.

2.2. Students choose the topic of the Project during the second year of study.

2.3. The formats of the Project are:

2.3.1. Academic Project — that is the research made for the purposes of gaining new knowledge of the structure, features and regularities of the chosen topic. The Academic Project can be done in the case format.

2.3.2. Research Project — that is the solution of an applied problem with some product (project solution) as the outcome of the project.

1. **STAGES OF PREPARATION OF THE EXAMINATION PROJECT**

3.1. **Preparation of the project.** At this stage, students are formulating working hypotheses / concepts of their works, highlighting the problem to solve in the project, and proposing the basic structure of the project.

3.2. **Uploading the project to the LMS system**. It is mandatory for the student to upload the final version of the project in electronic unscanned form into a special module for the support of examination projects in the LMS before the deadline specified in the schedule of the state final attestation.

3.3. **Valuation of the project** is regulated by paragraph 6.1 of these regulations.

**4. REQUIREMENTS FOR STRUCTURE, CONTENT, VOLUME AND EXECUTION OF THE PROJECT**

**4.1. General requirements for the Project**

4.1.1. Project represent a written report on the scientific research and must have an appropriate standard structure, i.e. consist of several interrelated parts of the text:

* **Title** page with the full name of the Laboratory and the NRU HSE, topic of the research with the names and signatures of the author and supervisor, the date of the official presentation of the work.
* **Table of Contents.**
* **Introduction.**
* **Theoretical part** - an analytical review of the scientific literature, the analysis of the conceptual framework, the analysis of theoretical and practical problem.
* **Empirical part** - a description of data collection and processing methods.
* **Conclusion** - summary about the significance of the work, beyond the limits of the studied or convertible object.
* **References.**
* **Applications.**

4.1.2. **Introduction of Project** should give a general notion of the work and help the reader to understand the common idea of the scientific research. It must contain the following sections:

* relevance of research;
* scientific problem solved by the researcher;
* object and subject of study;
* purpose and hypothesis of the study;
* research objectives;
* research methods and techniques;
* empirical base of research;
* scientific novelty and practical significance of the research;
* text structure.

4.1.3. **The theoretical part** of the Project is an independent theoretical study of the student on selected issues. It should contain a complete review of the current state of the problems studied in Russian and foreign science. The theoretical part should have an internal structure that reflects the logic of the research. It may consist of one or several chapters. The number, volume and location of sections are determined by the logic of the presentation of the material. All listed sections should have their own number and meaningful title and be reflected in the table of contents. Each paragraph should end with a brief resume, summarizing the review in terms of its relevance to the overall objective of the study.

4.1.4. **The empirical part** is a report about the program of empirical research, methodology and procedure for collecting empirical data and their analysis. The standard structure may contain the following sections:

* an empirical research program, including a description of methods, procedures, research samples;
* description of the results;
* the discussion of the results;
* findings.

The empirical part can also be a description and analysis of a statistical consulting case (case) carried out by the researcher himself or of another project implemented for practical analytical purposes.

The number, order and meaningful names of paragraphs should reflect the essence and logic of the study. Also, in the empirical part should contain tables and figures, clearly showing the results of the study.

4.1.5. **The conclusion** should contain a general assessment of the results of the work done, its theoretical and empirical parts. It should describe the extent to which each of the tasks specified in the introduction is solved; it is concluded whether the hypothesis put forward in the introduction is confirmed. Also, in the conclusion clearly formulated the main conclusions of the research. Based on the results of the research, specific practical recommendations are formulated for specific specialists. It also identifies the limitations and shortcomings of the study performed, outlines the prospects for further development of the problem.

4.1.6. **References** should contain a bibliographic description of all sources cited in the work, made in accordance with GOST R7.05-2008.

4.1.7. **Applications** should contain stimulus material, keys and instructions for interpreting the methods used in the study, primary empirical data, as well as, if necessary, large tables, figures and other illustrative material that the author considers necessary to present in the work, but which when placed in the text overly clutter it and impede perception.

**4.2. Requirements to the content of the Project**

The Project can be of two main types: practical project and research.

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| --- | --- | --- | --- |
| **Type of the Project** | **Purpose of the Project** | **What determines the type of work** | **The main elements of the structure** |
| Research  | Getting new knowledge  | Research question  | AnnotationIntroductionLiterature reviewMethodology of researchResultsConclusions anddiscussionBibliographyApplications |
| Research as case study | Understanding the new experience, uniquepractices, the mechanism of the "black box"" | Understanding the new experience, uniquepractices, the mechanism of the "black box"" | AnnotationIntroductionLiterature reviewMethodology of researchResultsConclusions anddiscussionBibliographyApplications |
| Practical project | Developing a new intellectual product | Project idea | AnnotationIntroductionLiterature reviewMethodology of researchResultsConclusions anddiscussionBibliographyApplications |

**4.2.1. Project requirements**

**4.2.1.1. Project of a research type**

A Project of a research type is a report on the self-planned and conducted by the student scientific research, including the results obtained and their interpretation, conclusions that would allow to expand the knowledge of the studied problems and possible ways to solve them. The motive for writing research paper can be an ambition to detect and fill gaps in existing scientific knowledge. The direction of this type of work is given by research questions and hypotheses, which are formulated on the basis of explanatory theories. Accordingly, the purpose of the Project is to find answers to the questions posed, to confirm or to reject the formulated hypotheses.

The following basic requirements are imposed on research-type Projects (besides the general requirements listed above):

* the study, starting with the formulation of questions and hypotheses, should be based on theories recognized in the studied area and take into account the results of the most significant published studies; accordingly, the Project should demonstrate the author’s knowledge and understanding of the scientific context of the work;
* the formulation of research questions and hypotheses must possess novelty, i.e. do not reproduce the already published works of other researchers;
* achieving the goals of the Project should be related to the author’s own original research – designing the research methodology, planning research activities, collecting, processing and analyzing data, interpreting the results;
* the proposed research plan should not only meet the objectives set in the work, but also be realistic in terms of the possibilities to carry out the planned research;
* conclusions and recommendations on the further research directions and / or their practical use should be made on the basis of a critical analysis of the results obtained and the results of other scientific papers published on this topic;

**4.2.1.2. Project of a research type in the form of a case**

The Project of a research type in the form of a case is a report on the self-planned and conducted by the student research performed in the strategy of the case-study. This strategy, in contrast to a sample study or experiment, implies an in-depth study of the phenomenon of interest in its context. The case-study is aimed at explaining the reasons for the emergence and existence of the phenomenon, at researching the decisions that led to its occurrence (why they were taken, how they were implemented, what results they brought). For the rest, the Project of this type is similar to the traditional research work: it must be obtained and interpreted the results of the student’s own research, made critical analysis and conclusions, allowing to expand the knowledge of events and phenomena of scientific and practical interest.

The motive for writing a work in a case-study strategy may be a desire to explain the emergence of a phenomenon that does not fit into existing theories, or a desire to explain how a scientifically established pattern is realized at the level of the object being studied, considered today as a “black box”. The direction of the case-study, as well as other studies, is given by the theory and research questions. However, in the case of a case-study research questions are formulated in terms of “how” and “why.” The purpose of the Project is to find answers to the questions posed.

The following basic requirements are imposed on Projects in the form of a case (besides the general requirements listed above):

* the case-study object should be of interest to the professional community;
* the study should be included in the context of theories recognized in the studied area and the most significant published studies; accordingly, the Project should demonstrate the author’s knowledge and understanding of this context;
* achieving the goals of the Project should be related to the author conducting his own original research – designing the research methodology, planning research activity, collecting, processing and analyzing data, interpreting the results;
* special attention should be paid to the issues of ethical and authorized use of the information obtained in the study, including official authorization from the organizations on the basis of which the study was conducted;
* the proposed research plan should not only meet the objectives set in the work, but also be realistic in terms of the possibilities to carry out the planned research;
* conclusions should be made and recommendations for their practical use should be given on the basis of a critical analysis of the results obtained;
* the text of the Project should be logically structured and written in plain language for presentation not only to the supervisor and reviewer, but also to the entire professional community; and be appropriate for open access;

**4.2.1.3 The Project of the practical project type**

Project is a report about project development that allows you to create an intelligent product/ technology, and developed product itself. The direct result of the project (intellectual product) can be a complete data analysis for a corporate customer, methodological statistical development, etc. The difference between the project and research Project is that the Project is focused on the application of theory to practice and the creation of the corresponding product, while the research Project is aimed at obtaining new data, finding answers to research questions and increasing the knowledge.

The motive for writing project work may be the desire to develop realistically or potentially sought-after intellectual product. The direction of this work type is set by the search for project ideas and the choice of the best (or optimal for some parameters) managerial alternative to the project implementation. Accordingly, the purpose of the Project is to find the project idea, the calculated embodiment of which will be the best (or optimal) version of the project, and in the development on its basis of the final intellectual product.

The following basic requirements are imposed on works of the project type (except for the general requirements listed above):

* the project should be based on the project idea chosen among alternatives, situation without alternatives is not allowed;
* the choice of a project idea from alternatives is made on the basis of their evaluation in according to clearly stated and valid criteria;
* search for project ideas should be based on published scientific work (theoretical, applied, research), including forecast, performed and published by recognized research organizations;
* the design of an intelligent product should be based on pre-project studies, including search, rationale and selection project idea, collection and analysis of information necessary to justify the parameters of intellectual product, analysis of costs, benefits and risks of its use;
* developed intellectual product, as a result of design, should be part of the Project and presented in a separate section;
* in the Project should be proposed criteria and methods for evaluating the effectiveness of product risk management measures;
* the text of the Project should be logically structured and written in understandable language based on the presentation not only to the supervisor and the reviewer, but also in open access to the entire professional community;

The preparation of the proposal of the developed product, as part of the Project, in the format necessary for presentation to interested organizations and funds is welcomed. Previously developed projects that are not related to the Master’s programme cannot be accepted as a result of the Project.

**5. REQUIREMENTS FOR VOLUME AND FORMATTING OF THE PROJECT**

5.1. The text of the Project is written reports on the results of completed research or implemented new practical tasks and achievements using the methods of applied statistics. Accordingly, their implementation must comply with the formatting requirements for the paperwork of this type of scientific work.

The text is printed on a standard sheet of A4 paper. Fields: left margin - 25 mm, right - 15 mm, upper and lower - 20 mm. Font: Times New Roman, size 14, line spacing - 1.5. Paragraph indent 1.25, without extended paragraph spacing. Changing the font and its formatting is allowed only to focus on certain terms, the most significant concepts, headings.

Pages of the written work (including figures and appendixes) should have continuous numbering. The first page is a title page on which the page number is not affixed. The title page is drawn up according to the established sample.

The second page contains a table of contents, designed in accordance with the standards of scientific works. All research paper items highlighted in the text should be numbered and reflected in the table of contents. Table of contents should contain the page numbers of all sections.

Each of the main structural parts of the work begins with a new page.

Tables and figures are made in accordance with GOST 7.32-2001.

In-text references are made in the form of the author's last name and, separated by a comma, the year of publication, enclosed in square brackets. In the case of direct quotation, after the year of publication, the number(s) of the page(s) is indicated through a dot.

References are placed at the end of the work, after the Conclusion. It should contain a bibliographic description of all sources cited in the work, made in accordance with GOST R7.05-2008. Sources not used in the text of the research paper are not included in the list of references.

Appendixes are placed after the list of references. Each appendix starts with a new page with the word “Appendix” in the upper right corner, its sequence number and subject title. The numbering of the pages on which the appendixes are placed continues the numbering of the entire work.

5.2 Work is performed in **English language**.

**6. CRITERIA FOR EVALUATION OF THE PROJECT**

6.1. During the preparation of the Project the student must demonstrate possession of the following competencies:

• formulate and solve research goals and objectives;

• choose methods and research methods appropriate to the assigned tasks, if necessary, modify the existing ones and develop new ones based on the objectives of the specific research;

• carry out a quantitative and qualitative analysis of the obtained empirical data, their applied interpretation, and formulate conclusions;

• conduct bibliographic search and analysis with the involvement of modern information technologies;

• effectively present the results of the conducted work in the form of reports, abstracts, articles, presentations;

• draw up reports on completed scientific studies in accordance with existing requirements with the assistance of modern editing and printing tools.

When evaluating a Project, members of the Projects assessment commission are guided by the following criteria:

* Compliance with the content of Project and approved topic.
* Relevance, scientific novelty and practical significance of the project.
* Achievement of goals and objectives.
* Volume of the analysed material (theoretical and empirical), completeness and depth of analysis.
* Correctness of the empirical research design (choice of methods and techniques for data collection and processing, research design, analysis and description procedures)
* Correctness, completeness and depth of interpretation of the research results.
* Compliance with the findings and the study results, the depth and validity of the findings.
* Significance of the practical recommendations, their relationship with the results of the study.
* Compliance with the Project design and requirements.
* Compliance with the ethical standards of scientific research.

The final grade for the project is set by the commission and is the arithmetic average of the grades given by the members of the commission participating in the examination. The score is rounded using the mathematical rounding formula to the nearest integer. The student's examination project is evaluated on a ten-point, and then five-point scales. The final grades should be entered into the minutes of the examination committee meeting, where the chairman and members of the examination committee are signed.

In case of an unsatisfactory assessment or if the examination project is not loaded into the special module for the support of examination projects in the LMS before the deadline specified in the schedule of the state final attestation, the attestation could be repeated in accordance with the local act regulating the final State certification of graduates of the University at the end of the next academic year.