

APPROVED

By Academic Council of the
Faculty of Computer Science
National Research University
Higher School of Economics
Protocol No.№2.3-01/1909-01
of 19.09.2020r.

Guidelines for the preparation, evaluation, defense and publication of term papers and theses for the Master's program in the field 01.04.02 "Applied Mathematics and Computer Science" "Statistical Learning Theory"

1. General provisions

1.1. These Guidelines for the preparation, assessment, defense and publication of term papers and final master theses for the Master's educational program in the field 01.04.02 "Applied Mathematics and Computer Science" "Statistical Learning Theory" (hereinafter referred to as the Guidelines) are prepared on the basis of and in accordance with the "Provision on the coursework and Thesis of students enrolled in bachelor's programs, specialty programs and master's programs at HSE (Appendix to the HSE Directive No. 6.18.1-01 / 1007-02 of July 10, 2015, confirmed by the Academic Council of the HSE, Minutes № 8 of 11.28.2014).

1.2. The Guidelines establish the recommended procedure for the preparation of course work and Thesis, contain requirements for the structure, content, scope, design, formats of the coursework/ Thesis, the timing of the various stages of work on the coursework/ Thesis, criteria for evaluating the coursework/Thesis, procedure for defense, proposing reviewers and requirements for reviewing a Thesis.

1.3. Coursework and Thesis are performed and presented in English if the study of the disciplines of the educational program is partially or fully conducted in English.

1.4. The implementation of these Guidelines is obligatory for students of the Master's educational program "Statistical Learning Theory" (hereinafter referred to the text of the EP) in the preparation, defense and publication of the coursework and Thesis.

2 General requirements for coursework

2.1. Coursework can be carried out in the form of research work or course project (Section 2.4 of the Regulations).

As a rule, *research work* includes: a review and a scientific assessment of previous works on similar topics, the construction or detailed description of a

mathematical or other model and algorithms, a theoretical assessment of the complexity of the main algorithms for solving a problem, a mathematical proof of statements about the properties of a model or other structures, experimental verification of adequacy models (correctness, completeness, accuracy, etc.), experimental (empirical) analysis of the computational complexity of the proposed solutions, etc.

Course project - development of an applied problem, as a result some software system or hardware-software complex is being created. As a rule, the course project includes: justification of the significance of the applied problem; review and comparative analysis of existing solutions; a detailed formal description of the proposed solution (general architecture, structure of classes and their interfaces, volumetric characteristics, etc.); description of the system or technology from the user's point of view: justification of the optimality of the selected solutions, including on the basis of the analysis of the experiment; comparison of the proposed system or technology with well-known counterparts in terms of functionality, efficiency and usability; system demonstration and its documentation, etc.

2.2. Coursework cannot be performed by students in groups.

3. Stages of preparation of the coursework

3.1. The order and terms of the proposal and approval of the course work are determined in accordance with the Regulations.

3.2. The topic of the coursework is chosen by the student in the first year of study. By November 20, a student informs the Program Academic Head and the Program Coordinator about the topic and format of the coursework. A written application is made in the name of the academic director of the Program (Appendix 3).

3.5. Not later than 1 month prior to the submission of the final version of the coursework, the student has the right, in agreement with the manager, to change the subject and format of the coursework, as well as change the leader by submitting a corresponding application signed by the former leader and the new leader, addressed to the academic director of the Program.

3.6. These Guidelines do not establish mandatory public defense of the coursework.

3.7. The list and deadlines for the stages of selection and coordination of topics and preparation of the coursework Program are given in Appendix 1.

4. Supervision of the coursework

4.1. The supervisor of the coursework is appointed, as a rule, from the number of faculty members, researchers and PhD students of HSE. In agreement with the academic head of the Program, a third-party employee may be appointed as the head of the coursework.

4.2. Obligations and rights of the supervisor are defined in paragraph 5.1 of the Regulations.

4.3. For work submitted after the deadline specified in Appendix 1, the supervisor has the right to give an unsatisfactory rating without reviewing the content of the work.

4.4. Supervisor makes a review and assesses the coursework, guided by the general criteria specified in the sample of the supervisor's review and accompanies the evaluation with a brief commentary that describes the main advantages and disadvantages of the coursework (Appendix 3). The supervisor's review must be uploaded by a student to LMS.

5. Requirements for the content of coursework

5.1. It is mandatory to issue a report on the implementation of the coursework : technical documentation for the coursework , made in the format of a course project, a report on coursework, performed in the format of research work) (hereinafter - the Report on the coursework).

5.2. The following structure of the Report on the coursework is recommended :

- Title page
- Abstract (0.5-1.0 pages). A brief description of the object of study, the purpose of the work, the method or methodology of the work, the results of the work, the approbation of the work (publications, speeches at conferences, theses of reports, Certificates of registration of programs, etc.); list of keywords;
- Content;
- Introduction (up to 5 pages). It describes the relevance, goals and objectives of the work, the subject and methods of research, the novelty and reliability of the results obtained, their theoretical significance and practical value);
- Review and analysis of sources (selection of methods, algorithms, models for solving the set tasks);
- The theoretical part (description of the selected or proposed methods, algorithms, models, techniques, etc.);
- Optional (may not be used in the case of a purely theoretical work): description of the experiment, analysis and evaluation of the results obtained;

- Conclusion and prospects for further research on this topic;
- List of sources;
- Appendices (if necessary). The appendices may contain the results of experiments (tables, graphs, etc.), necessarily - the program code.

5.3. The report on the coursework, appendices (source codes of the program, executable file, etc.) and presentation must be uploaded by a single archive to the LMS in the “Coursework” project.

5.4. The report on the CU is necessarily loaded via the LMS into the Antiplagiat system.

6. Evaluation of the coursework

6.1. The grade for the coursework is set by the supervisor according to the criteria set out in the coursework review template (Appendix 5).

6.2. A student who has received an unsatisfactory assessment for coursework or who has not submitted a coursework within the prescribed period is considered to have academic failure, which he must eliminate in the prescribed manner. He must eliminate the comments and refine the text of the coursework; however, the topic of the coursework can be changed by order of the dean of the Faculty. The procedure for re-transfer of the coursework is regulated by the “Provision on the organization of interim attestation and current monitoring of students' progress at HSE”.

7. Requirements for publication and storage of the coursework

7.1. These Guidelines do not establish the requirement of mandatory publication of the results of the coursework.

7.2. Scientific Supervisor and Academic Head may recommend the publication of the coursework's results in academic and technical publications, placing the coursework on the HSE website and other online resources.

7.3. original copies of reports are stored at the Programme's office in paper and electronic form for two years after completion of the student's studies.

8. General requirements for Thesis

8.1. Thesis can be performed by students of the Program in an academic or project-research format (clause 3.4 of the Regulations).

Academic format - research carried out in order to obtain New knowledge about the structure, properties and patterns of the object (phenomenon) under study.

Design and research (engineering) format - application development problems, the result of which is the creation of a certain product (project solution).

8.2. Thesis cannot be performed by students in groups.

8.3. THESIS is performed in English. There are no special requirements in this case.

9. Stages of THESIS preparation

9.1. The main stages of the preparation of the THESIS are set out in general form by Appendix 2 to the Regulations. These Guidelines supplement the above-mentioned Annex 2 without abolishing or replacing its contents in whole or in part. The list and deadlines for the preparation and defense stages of the THESIS, adopted by the Program, are given in Appendix 5 to the Regulation.

9.2. The subject of the THESIS is chosen by the student in the second year of study (clause 3.3 of the Regulations). By November 20, the student informs the academic director of the Program and the training office of the Program on the theme and format of the THESIS. A written statement is made in the name of the academic director of the Program (Appendix 4).

9.3. Not later than 1 month prior to the defense, the student has the right, in agreement with the supervisor, to change the topic and format of the THESIS by submitting to the academic head of the Program a corresponding written statement signed by the former supervisor and the new supervisor.

9.4. The THESIS supervisor and the Programme's office from December to April of the second academic year provide the student with the necessary consulting assistance upon request, including on issues related to the THESIS public defense procedure.

9.5. The student presents the final version of the THESIS to the supervisor no later than 3 weeks before the date of defense.

9.6. The student submits the final version of the THESIS, together with the review of the supervisor and the reference of the Antiplagiat system to the Program Training Office no later than 10 days before the date of defense.

9.7. The Program Training Office is guided by the THESIS reviewer no later than 10 days and defense dates.

9.8. Other issues related to the preparation of the THESIS are governed by the Regulations.

10. Thesis supervision

10.1. Matters related to the scientific supervision of the THESIS are governed by clause 5.2 of the Regulations.

10.2. The research supervisors of the THESIS students of the Program are mainly appointed to HSE employees who have a scientific degree, as well as practitioners with experience in the information technology industry for at least three years.

10.3. THESIS supervisors can also be employees of outside organizations who meet the requirements of paragraph 5.2.3 of the Regulations. For students who have a THESIS supervisor who are not employees of the HSE, a curator is appointed from among the HSE employees (Section 5.4.2 of the Regulations).

10.4. Duties and rights of the supervisor of the THESIS are defined in paragraphs. 5.1.2 and 5.1.3 of the coursework and THESIS Regulations.

10.5. The supervisor within 7 calendar days after receiving the final version of the THESIS from the student is a review and evaluates the THESIS, guided by the general criteria specified in the sample review of the head, and accompanies the assessment with a detailed commentary that describes the main advantages and disadvantages of the THESIS, theoretical and practical applicability THESIS results (Appendix 5 - review on THESIS). The supervisor submits the review to the student for upload to the LMS. A copy of the review is sent to the Program Office.

10.6. For work submitted after the deadline specified in these Guidelines (Appendix 2), the supervisor has the right to give an unsatisfactory grade without considering the content of the work.

11. Content requirements for THESIS

11.1. If the THESIS is performed in the design and research format, technical documentation is drawn up. The documentation includes:

- Technical task
- Explanatory note
- Manual
- Program and test methods
- Text of the program
- other necessary documents (for example, Description of a programming language).

11.2. The technical documentation, the program (source codes, the executable file, etc.) and the presentation must be uploaded in a single archive to the LMS in the project “Final Qualification Work”.

11.3. Explanatory note must be downloaded via the LMS to the Antiplagiati system.

11.4. If the THESIS is performed in an academic format, report is made. The report includes :

- Title Page (Appendix 6)
- abstract
- Content
- Definitions, designations and abbreviations
- Introduction
- The main part (3-5 chapters: overview, staged, the main theoretical results, implementation and / or experiment, analysis of the results)
- Conclusion
- List of used sources
- Applications

11.5. The Thesis, applications (source codes of the program, executable file, etc.) and presentation must be uploaded by a single archive to the LMS in the project “Final Qualification Work”.

11.6. The THESIS report is necessarily loaded via the LMS into the Antiplagiati system.

11.7. Thesis written in English is uploaded to the LMS no later than one working day before the deadline for downloading the final version of the THESIS to check operation for borrowings in the www.turnitin.com service. The result of the plagiarism check is then entered by the Program Manager at the LMS and after that the student can print the plagiarism check report.

11.8. Applications to the THESIS (the source code of the program, the executable file, etc.) are recommended to be laid out in open access (for example, GitHub or Yandex.Disk) with an indication of the link in the text of the report on the THESIS.

11.9. THESIS is considered to be submitted, subject to the delivery of a set of the following documents:

- Printed stitched final version of the THESIS, previously uploaded to the LMS,
- Abstract in Russian with the signature of the supervisor and the student,
- Annotation in English with the signature of the supervisor and the student,
- Report on plagiarism verification from the LMS, which includes the student's consent to publish a THESIS on the HSE portal (site),
- Feedback from the THESIS manager with his / her signature.

11.10. In case of exceeding the permissible 20% of matches following the plagiarism test, the supervisor no later than 5 working days before the designated date of defense of the THESIS proves (or not) the originality of these texts, provided identifying during the initial technical verification of the percentage of originality of the text less than 80%.

12. Review of THESIS

12.1. Requirements for THESIS reviewers are defined in clause 4.4.6 of the Regulations. By April 25, the academic director of the Program approves the list of reviewers of the THESIS from among the full-time research and teaching staff of the FNS HSE, staff from other departments of the HSE, other higher education institutions, scientific organizations and development companies that are experts on the topic of THESIS.

12.2. The directive for the appointment of reviewers is issued by the dean of the Faculty of Computer Science at the suggestion of the academic director of the Program no later than 1 month before the planned date of defense of the THESIS.

12.3. The Program Training Office sends the THESIS for review no later than 3 calendar days after its receipt. The reviewer compiles and submits to the training office a signed review for the THESIS no later than 2 days before the date of the THESIS defense. Reviewer's review form is given in Appendix 7.

12.4. The content of the review is communicated to the student by the Program Office of the Program no later than 1 calendar day prior to the defense of the THESIS.

13. THESIS Public Defense Requirements

13.1. Thesis written by students of the Program is subject to mandatory public defense. The order and procedure of defense are regulated by the Regulation on the state final certification of HSE graduates, enacted by the directive of the Rector of HSE 6.18.1-01 / 2004-08 of 04/20/2017

13.2. The public defense of the THESIS students of the Program takes place in the 4th module according to the approved schedule.

13.3. For the public defense of the THESIS, the State Examination Commission (SEC) is formed in accordance with the established procedure.

13.4. The defense procedure includes the speech of the THESIS author (up to 20 minutes), questions of the members of the SEC and the answers to them by the student, the final word of the student, including answers to the comments of the reviewer and members of the SEC. The personal presence of the scientific supervisor of the THESIS and the reviewer on defense is desirable.

13.6. Grading is done by rounding the average for all members of the commission. Score is set on a 5- and 10-point scale.

13.7. The results of the THESIS defense may be declared invalid by the SEC chairperson in case of violation of the State final certification procedure.

14. Student's right to appeal on the results of THESIS defense

14.1. An appeal may be filed personally by the student no later than the next business day after the announcement of the assessment. An appeal is submitted in the form of an application to the Program Training Office.

14.2. The reason for filing an appeal can only be a violation of the established procedure for the defense of the THESIS.

14.3. The procedure for consideration of appeals is in accordance with section 4 of the Regulations on the State Supervisory Board of HSE.

14.4. The decision of the appeal commission is final and not subject to revision.

15. Requirements for the publication and storage of Thesis

1 5.1. The program fully complies with the requirements set forth in HSE at the present time and / or which may be established in HSE in the future regarding public accessibility of THESIS.

1 5.2. The State Examination Commission may recommend the publication of the results of Thesis in academic and technical publications, the publication of annotations and full texts of Thesis on the HSE portal and other Internet resources.

1 5.3. The Thesis defended on paper and electronic media are stored at the Programme's training office for five years after the students have completed their studies, and then are deposited in the HSE Archive for storage.

Stages and Deadlines for Selection and Finalization of Term Paper and Thesis Topics

No	Stage	Responsible party	Deadlines
1.	Collection of proposed topics for term papers/theses, entry of data on proposed topics and supervisors into LMS, and its publication on the programme's website	Departments and research subdivisions/ Programme Office	From September 10 to October 01 of the ongoing academic year. Information must be transferred to the Programme Academic Supervisor within 2 business days after October 01
2.	Review of proposed topics by the programme management	Academic Supervisor and Academic Council/ Programme Office	Within 5 business days after receiving the data from the Programme Office; after review, the data is passed back to the Programme Office
3.	Notifying departments and research subdivisions of approved term paper/thesis topics	Programme Office	Within 1 business day from the Programme Office receiving the Academic Council's resolution on the list of propose topics
4.	Further discussions on term paper/thesis topics, finalization of the list of topics to be offered to students	Departments and research subdivisions / Academic Supervisor / Programme Office	Departments and research subdivisions may discuss reasons for exclusion of their topics within 3 business days after receiving the notification from the Programme Office. Following such discussions, the Academic Supervisor may return some topics on the list.
5.	Publication of data on topics and supervisors, the Guidelines and deadlines on the programme's website	Programme Office / Programme Coordinator	No later than October 15 of the ongoing academic year
6.	Topic proposals by students	Students/ Departments/ Academic Supervisor	No later than November 10 of the ongoing academic year
7.	Review of topics proposed	Students/ Academic	Decision on whether to approve

	by students	Supervisor / Academic Council	topics proposed by students must be taken no later than November 15 of the ongoing academic year
8.	Selection of term paper/thesis topics by students	Students	No later than November 20 of the ongoing academic year
9.	Assigning term paper/thesis topics by a directive, and notifying the supervisors	Academic Council/ Programme Office / Academic Supervisor /Dean	The Academic Council must assign topics and supervisors within 5 business days after their selection (i.e. after November 20) The directive is issued no later than December 15 of the ongoing academic year
10.	Changing or revising term paper/thesis topics (and their authorization by the Dean's directive)	Students/ Programme Office / Academic Supervisor /Dean	No later than one calendar month before the official deadline for final submission of the term paper/thesis to the Programme Office

Key Stages of Thesis Preparation

No	Stage	Parties involved	Deadlines
1.	Preparation of the outline of the thesis , and its review by the supervisor	Student/ Supervisor	No later than January 31 of the ongoing academic year
2.	Submission of the first draft of the thesis	Student/ Supervisor / Programme Office	No later than May 10 (one calendar month before the scheduled defence)
3.	Revision and finalization of the thesis (including submission of the final text and abstract to the supervisor)	Student/ Supervisor	No later than May 24 of the ongoing academic year
4.	Supervisor's review of the thesis	Supervisor/ Programme Office	Within one calendar week after receiving the finished thesis
5.	Uploading the thesis to the Antiplagiat system (via special LMS module).	Student	No later than May 31 of the ongoing academic year
6.	Final submission of the finished thesis to the Programme Office	Student/ Programme Office	No later than May 31 of the ongoing academic year
7.	Review of the thesis: appointment of the reviewer initiated by the Academic Supervisor and enacted by the Dean's directive	Dean/ Academic Supervisor /Reviewer	The directive is signed by the Dean no later than one month before the scheduled defence
8.	Review of the thesis: forwarding the thesis to the reviewer	Programme Office/ Reviewer	The Programme Office forwards the thesis for review no later than three calendar days after its receipt
9.	Review of the thesis: submission of the review	Reviewer/ Programme Office	No later than 4 days before the defence
10.	Review of the thesis: notifying the student of the	Programme Office / Student	No later than 3 days before the defence

	review's content		
11.	Defence	Student/ Supervisor/ Academic Supervisor/ Dean	Deadlines are determined by the curriculum and SFC schedule in accordance with the <i>Regulations for the State Final Certification of HSE Students</i>

Sample application form on the topic of the coursework

National Research University "Higher School of Economics"

Faculty of Computer Science

Educational program _____

**Application
for choosing the topic of the course work**

Student _____ Group # _____

		Topic
in Russian		
in English		

Working time on the coursework _____ to _____

I agree to supervise the course work.

Supervisor:

_____	_____	_____
Position	Full Name	Signature

I agree with the topic of work.
The requirements of the supervisor are clear.

Student: _____
Signature

Consultant

_____	_____	_____
Position	Full Name	Signature

(filled in if the supervisor is external)

Academic Supervisor _____

Moscow, <YAER>

National Research University – Higher School of Economics
Faculty of computer science
Master’s Programme in Statistical Learning Theory

APPLICATION
For Thesis topic approval

Student _____ group _____

Topic
(Russian) |

Topic
(English) |

Approved by supervisor:

Degree, department (place of work) *Full name* *Signature*

Approved by student:

Student
Signature : _____

Consultant (*if applicable*)

Degree, department (place of work) *Full name* *Signature*

Approved by Master’s Programme
Academic Director

Signature

Moscow, <YEAR>

Supervisor's review for the course work/thesis

Name of the student _____

Year _____

Faculty _____

Title:

« _____ »

№	Evaluation criteria	Grade according to supervisor (out of 10)
1.	Content of the course work corresponds with the title	
2.	Aims and objectives stated in the course work have been accomplished	
3.	Originality and novelty of the course work	
4.	Degree of independence of the student during research for course work	
5.	Formatting and composition of the course work	
	Final grade** for the course work, that appears in the academic transcript of the student	

Comments:

Supervisor _____

/signature/ _____

(Full name, Degree, title, department (place of work))

Date

** The final grade is the average of the five grades according to the evaluation criteria of the course work.

Sample of the title page of the coursework/Master's thesis

**"National Research University "High School of Economics"
Faculty of Computer Science
Programme
"Statistical Learning Theory"**

**COURSE WORK/MASTER'S THESIS
topic**

<Subject>

Student _____
<Full name>

Supervisor: _____
<degree>, <title>, <full name>

Consultants: _____
<degree>, <title>, <full name>

Moscow <YEAR>

Appendix 7. THESIS Review Template

National Research University Higher School of Economics
Faculty of Computer Science

Review
for master's thesis

Student _____
Full Name

Educational program " _____ "

Thesis topic:

Reviewer

(academic degree, academic title)

(Place of work, position)

(signature)

(Full name)

Date _____