

APPROVED
 by Academic Committee
 of the educational program
 "Mathematics"
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The program of practice

Master's degree program "Mathematics"

*Developed by the Academic Committee of the Master's degree program
 "Mathematics" and the academic supervisor of the of the Master's
 Degree "Mathematics" Bagaev A.V. for students of the 2025 sets*

Annotation

Practical training in the educational program "Mathematics" is implemented in the form of a project on pedagogy, course work, research practice, research project and preparation of the WRC. The main purpose of practical training is the formation, consolidation, development of research and practical skills in the profile of the educational program.

The program of practice includes a description of the elements of the curriculum of the educational program, organized in the form of practical training and grouped in the module "Practice" of the curriculum.

SECTION 1. General information

Year of study	Type of internship	Element of practical training (PTE)	Feature 1 ¹	Feature 2 ²	Credit units per student	Academic hours per student	Internship period
1	Research	Course paper	C	S	4	152	1-4 modules
1	Project	Project on pedagogy	C	S	2	76	2-4 modules

¹Compulsory (C) – PTE is mandatory for all students of the degree programme

Elective (E) – the student has the opportunity to complete one or several items from the proposed list of curriculum elements in the «Practice» module of the curriculum.

²Scheduled(S) – PTE must be completed strictly in the current academic year.

Free (F) – PTE can be completed throughout the entire period of study until the start of the final module of the graduating year.

2	Research /project	Research practice	C	S	3	114	1-3modules
2	Project	Research project	C	S	2	76	2-4 modules
2	Research	Preparation of the final Master's Thesis	C	S	18	684	1-4 modules

SECTION 2. Description of the practice content

Type of practice	The control point for signing the assignment to the student	A control point for providing an intermediate version of the text/report	A control point for providing the final text/report
Term Paper	The choice of the topic of the Term Paper by students / initiative proposal of topics is carried out from October 10 to November 01 of the current academic year. The second wave of choosing the topics of Term Paper, or an initiative offer to those students whose all submitted applications were rejected from November 01 to November 20 of the current academic year. Approval of Term Paper topics in Groups of students no later than December 15 of the current academic year.	No later than 10 days before the date of defense, the submission of the final text of the Term Paper to the supervisor.	Uploading the text of the <i>Term Paper</i> to the Anti-Plagiarism system no later than 7 days before the date of protection. In the period of 10 days before the session, public defense of the Term Paper.
Preparation of the final Master's Thesis	The choice of the topic of the final Master's Thesis by students / initiative proposal of topics is carried out from October 10 to November 01 of the current academic year. The second wave of selection of topics for final Master's Thesis, or an initiative offer to those students whose all	No later than 14 days before the date of protection, the provision of the final version of the final Master's Thesis to the head; No later than 10 days before the date of protection, the review of the final Master's Thesis.	Uploading the final Master's Thesis to the Anti-Plagiarism system no later than 7 days before the date of protection of the current academic year. Defense of the final Master's Thesis no later than the beginning of the session of module 4.

	submitted applications were rejected from November 01 to November 20 of the current academic year. Approval of the topics of the final Master's Thesis in the individual plans of students, fixing the topics and the leaders of the final Master's Thesis for students by order no later than December 15 of the current academic year.		
Projects	The project choice date is no later than October 1.	Determined individually by the project manager	Determined individually by the project manager
Research practice	Submission of the assignment in paper form with the signature of the student and the supervisor to the training office no later than the start date of the internship	Determined individually by the practice manager	It is determined by the head of the practice, but no later than three working days before the end of the practice.

2.1. Elements of practice "Projects"

2.1.1 The purpose of the project activity is to use the knowledge, skills and abilities acquired during training to formulate and solve practical problems of both academic and applied nature.

The goals, objectives, prerequisites, dates of control points, content, features of development, evaluation and reporting of each project are determined by its head. The project activity of students belongs to the mandatory part of the curriculum. The projects proposed by the project managers or at the HSE "Project Fair" are selected that are related to the subject of the program, correspond to the objectives of the educational program and help students develop the skills and competencies provided for in the HSE Educational Standard from among those recommended by the academic supervisor.

2.1.2 The academic supervisor has the opportunity to block a project proposal for students of his educational program if the academic supervisor believes that the proposed project does not meet the above criteria. The blocked project proposal is not displayed at the "Project Fair" for students of the educational program whose academic supervisor made such a decision.

The student is not prohibited from carrying out projects from among those not recommended by the academic supervisor. The results obtained by the student on such projects can optionally be credited in excess of the standard credit units. The student has the right to decide whether to participate in an uncoordinated project on an optional basis and choose another project for credit within the framework of the educational program, or to change the selected project to another one, which will be agreed by the academic director of the educational program.

After signing up for the project and the subsequent approval of the candidate by the project manager, the student cannot leave the project voluntarily, without the consent of the head. In case of unauthorized departure, the supervisor has the right to evaluate the work of the corresponding student as unsatisfactory, which means academic debt.

The project activity of students is regulated by the Regulations on the practical training of students of the main educational programs of higher education – bachelor's degree, specialty and master's degree programs of the National Research University "Higher School of Economics".

2.1.3 Features and evaluation criteria:

The evaluation of the student's work is carried out by the project manager in accordance with the principles specified in the evaluation sheet / statement for the project. At the end of the project, the project manager fills out an assessment sheet, giving an assessment for the work done by the student and the number of credits for the amount of work on the project. The evaluation sheet must be submitted to the training office no later than 5 days from the end date of the project.

2.1.4 Resources and material and technical base required for implementation:

The set of necessary resources is determined by the specifics of each specific project, their selection is carried out by the project manager.

2.1.5 Features of performing tasks under restrictive or other measures:

In the conditions of restrictive measures, preference is given to projects that can be implemented remotely. Other features of performing tasks under restrictive measures depend on the nature of the restrictions and are specified by the governing bodies of the University, Faculty or educational program.

2.2 Elements of practice "Term Paper"

2.2.1 The purpose and objectives of the practice element "*Term Paper*" is the development of analytical and research competencies, as well as the practical application of theoretical and practical knowledge gained during lectures and seminars during the relevant academic year. Prerequisites are successful mastery of the material of lectures and seminars during the relevant and previous academic years.

2.2.2 Term papers of the educational program "Mathematics" are carried out in a research format. Term papers are carried out individually. Term papers should be written in accordance with the Methodological Guidelines for writing term papers and designed in accordance with the Rules for the preparation of term papers for the educational program "Mathematics".

The deadlines for completing the course work are regulated by the Schedule of completion and delivery of term papers.

2.2.3 Evaluation features:

Term papers performed by 1st year undergraduates are subject to mandatory public protection. At the defense, the student makes an introductory speech and presentation, which should state the relevance of the research, the purpose and objectives, the structure and main conclusions. At the end of the introductory speech, the student answers the questions and comments of the commission. Term papers are not subject to review. The course work is evaluated by the supervisor in the Review Sheet of the supervisor. After carrying out all the defenses assigned to the meeting, the local commission decides on the final grades for the coursework heard.

Evaluation criteria:

- Compliance of the content of the work with the topic;
- Relevance and completeness of the historiographical review;
- Fulfillment of the tasks in the main part;
- Compliance of conclusions with the set goal;
- Adequacy of the methods used to the goals and objectives of the study;
- Compliance of the structure of the work with the goals and objectives of the study, the logical presentation and completeness of the disclosure of the topic;
- Compliance of the design of the work with the Rules for the preparation of the course work for the educational program "Mathematics".

Each work is checked in the "Anti-Plagiarism" system for the presence of borrowings. The volume of the borrowed text in the course work cannot exceed 30%. In the case of self-citation, the amount of borrowing in the course work cannot exceed 50%. Exceeding this figure is brought to the attention of the head of the course work and the commission for the protection of the course work by the manager of the educational program and may become the basis for lowering the grade or issuing an unsatisfactory grade, as well as for disciplinary action.

2.2.4 Resources and material and technical base required for implementation

In the course work, students use materials from external resources — libraries and archives, the resources of the HSE library, as well as electronic information resources provided by the HSE library by special subscriptions: databases of domestic and foreign periodicals, databases of scientific citation, databases of electronic books, dictionaries and encyclopedias, databases of digital images.

2.2.5 Features of implementation in conditions of restrictive or other measures.

In the conditions of restrictive measures, stationary passage (if it is the norm under normal conditions) by the decision of the University or, in the case of delegation of these powers to the educational program, the Academic Council of the educational program can be replaced by remote. Other features of performing tasks under restrictive measures depend on the nature of the restrictions and are specified by the governing bodies of the University, Faculty or educational program.

2.3 Elements of practice "Research practice"

2.3.1 The purpose of the "Research Practice" element is to deepen the student's initial practical experience, develop general and professional competencies, check the student's readiness for independent work, as well as prepare for the implementation of the final Master's Thesis. Tasks - further development of the skills of independent research activities of undergraduates obtained at previous stages of training with the transition to conducting independent research; collection, systematization and generalization of materials for the preparation of the final Master's Thesis, including final preparation and implementation of the practical part within the framework of the final Master's Thesis; formation of students' personal and professional qualities through independent creative performance of research tasks. Prerequisites are the development of the previous part of the educational program in sufficient volume to pass these types of practical training. The method of practice is stationary and/or on-site.

2.3.2 The choice of an organization for a research internship is carried out depending on the topic of the final Master's Thesis, the profile of the student, his interests and prospects for further activities.

Distributed (discrete) internship during the academic year is not allowed. Participation in project activities cannot be counted as an internship.

During the internship, students must take part in all activities, according to the work schedule (plan) of the internship. All students undergoing internship are subject to the internal regulations of the organizations that they visit during the internship; they are required to familiarize themselves with the safety regulations.

2.3.3 Features and evaluation criteria: the evaluation is rounded off arithmetically. Criteria for evaluating a manager:

The level of theoretical training of the student;

Assessment of the ability to plan their activities (takes into account the ability to predict the results of their activities, take into account real opportunities, risks and reserves);

The level of acquired skills of research / project activity (project execution / degree of independence in research work, quality of processing of the received data);

Assessment of the activity of the student-intern, including the use of electronic databases;

The level of responsibility in conducting theoretical and practical research.

Each indicator is evaluated on a 10-point scale with a coefficient of 0.2 and summed up.

The procedure for forming an assessment of practice:

- grade "8-10" - is given to the student if he has completed the internship assignment in full and completely correctly, and has submitted a report on the results of the internship to the supervisor within the prescribed time; has set out in the report in full questions on all sections of the practice;

- the grade "6-7" is given to the student if he/she timely meets the established deadlines submitted a report on the internship to the head, but received minor comments on the completeness and quality of the assignment for practice, on the design and completeness of the submitted report;

- the grade "4-5" is given to the student if he has submitted a report on the internship to the supervisor in a timely manner, but has received significant comments on the completeness and quality of the assignment for practice, on the design and completeness of the submitted report;
- the grade "0-3" is given to the student who has not completed the assignment for the practice, i.e. either completed only a small part of the assignment for the practice, or did not provide a report on the internship in due time.

2.3.4 Resources and material and technical base required for implementation:

When performing individual tasks during the internship period, students mainly use Internet resources.

The specified material and technical support must meet the current sanitary and fire safety standards, as well as safety requirements during work.

2.3.5 Features of performing tasks under restrictive or other measures

In the conditions of restrictive measures, stationary passage (if it is the norm under normal conditions) by the decision of the University or, in the case of delegation of these powers to the educational program, the Academic Council of the educational program can be replaced by remote. Other features of performing tasks under restrictive measures depend on the nature of the restrictions and are specified by the governing bodies of the University, Faculty or educational program.

2.4 Elements of practice "Preparation of the final Master's Thesis"

2.4.1 The purpose and objectives of the elements of practice "*Preparation of the final Master's Thesis*" are the accumulation and application of all mastered professional research skills: the ability to independently formulate a research problem and justify its relevance, substantiate the research methodology, conduct a competent historiographical analysis, demonstrate mastery of mathematical research methods.

2.4.2 The topic of the final Master's Thesis must be approved by the academic supervisor.

Students of the educational program "Mathematics" perform the final Master's Thesis in an academic / project format (individual / group study or project). The final Master's Thesis is performed and defended in English.

Other information about the preparation and defense of final qualifying papers is set out in the Methodological Recommendations for the preparation of the final Master's Thesis for the bachelor's degree program "Mathematics". The deadlines for the implementation of the final Master's Thesis are regulated by the Schedule for the implementation and protection of the final Master's Thesis .

2.4.3 The preparation of the final Master's Thesis is carried out within the framework of a separate element of the curriculum "Preparation of the final Master's Thesis". This element of practice is designed for working on the final Master's Thesis under the guidance of the academic supervisor and is assessed during the mandatory midterm assessment — the preliminary defense of the final Master's Thesis. This is a separate grade (pass/fail) assigned before the final Master's Thesis defense in the State Examination Commission and included in the diploma supplement.

Upon completion of the "Preparation of the final Master's Thesis", the student must submit an intermediate version of the final Master's Thesis (the Academic Supervisor and/or the Academic Office will provide a link to download the text). The dates for uploading the final Master's Thesis and for the preliminary defense are determined by the Academic Supervisor and are determined before the order for admission to the State Final Attestation. In this case, the final Master's Thesis may be revised to its final version after receiving a positive assessment for the "Preparation of the final Master's Thesis" curriculum element, where the intermediate version was submitted.

The preliminary defense of the final Master's Thesis can be organized either online or offline. The decision is made by the Academic Supervisor.

A final Master's Thesis submitted for pre-defense must contain:

1. The final Master's Thesis (completed or preliminary version);
2. A completed practical part (this could be a repository, working software product, code, etc.).

At the pre-defense, the student must briefly present the results of their research: topic, relevance, and outcome.

A committee (consisting of at least three members) reviews the final Master's Thesis, listens to the student's presentation, asks questions, and makes recommendations, if necessary.

All retakes for students who received unsatisfactory grades in the pre-defense of their final Master's Thesis, including due to failure to submit the final Master's Thesis or due to the discovery of violations of academic integrity, are organized before the end of the academic year of the graduating year and before the start of the State Final Examination.

2.4.4 The list of the main stages of final Master's Thesis preparation.

No	Stage of preparation	Deadlines	Participants stage of final Master's Thesis preparation
1.	Preparation of the final Master's Thesis draft, evaluation by the supervisor	Date set by the supervisor	student/ supervisor
2.	Resubmission of the final Master's Thesis draft (if not approved by the supervisor)	No later than December 25 of the current academic year or a date agreed upon with the supervisor	student/ supervisor
3.	Submission of the first version of the final Master's Thesis	Date set by the supervisor, but no later than one calendar month before the scheduled defense date of the final Master's Thesis	student/ supervisor
4.	Submission of the interim/final text of the final Master's Thesis for pre-defense	Upon completion of the "Preparation of the Final Master's Thesis " workshop, but before the issuance of the order on admission to the State Final Examination	Student/ Commission/ Academic Supervisor
5.	Submission of the final text of the final Master's Thesis	Date set by the supervisor, but no later than 21 calendar days before the defense of the final Master's Thesis	student/ supervisor
6.	Uploading the final Master's Thesis to the Antiplagiat system	Date Agreed with the student's supervisor	student (automatically upon uploading the final text of the final thesis)
7.	Supervisor provides feedback on the final Master's Thesis	Within one calendar week after receiving the final version of the final Master's Thesis.	Supervisor/ Programme Office
8.	Reviewing the final Master's Thesis: Appointment of a reviewer by order of the faculty dean upon the recommendation of the academic supervisor	The order is signed by the faculty dean no later than one month before the scheduled defense date of the final thesis.	Program Office/ Faculty Dean/ Programme Academic Supervisor/ Reviewer
9.	Reviewing the final Master's Thesis:	The Program Office coordinates the receipt of final thesis texts by all reviewers no later	Program Office/ Reviewer

	Submitting the final Master's Thesis to the reviewer	than three calendar days after upload	
10.	Reviewing the final Master's Thesis: Receiving reviews and uploading them to the online module for student viewing	No later than six calendar days before the defense date of the final thesis.	Reviewer/ Programme Office/ students
11.	Submitting the final Master's Thesis to the State Examination Commission along with the supervisor's and reviewer's feedback	No later than 2 calendar days before the defense	Programme Office
12.	Defending the final qualifying work	The deadlines are determined by the curriculum and the State Final Examination schedule, but no later than June 30 of the current academic year.	Student/ supervisor/ academic supervisor/ faculty dean

2.4.5 Evaluation features.

The supervisor evaluates the final Master's Thesis according to the Review Sheet of the final Master's Thesis supervisor.

One reviewer is assigned for each final Master's Thesis. The reviewer is obliged to conduct a qualified analysis of the main provisions of the reviewed final Master's Thesis, the presence of his own point of view / design solution, the ability to use the methods of scientific research / design, the degree of validity of conclusions and recommendations / adequacy of means of achieving results, the reliability of the results obtained / expediency of the products obtained, solutions, their novelty and practical significance. The reviewer evaluates the final Master's Thesis according to the reviewer's Review of the final Master's Thesis.

When making an assessment, the content, design and presentation of the text of the work are taken into account, based on the evaluation criteria contained in the Methodological Recommendations for the preparation of the final Master's Thesis. Taking into account the results of the defense and the assessments of the supervisor and reviewers, the final assessment of the work is formed. The assessment for the final Master's Thesis is determined by an open vote of the members of the State Examination Commission (for the content of the final Master's Thesis, its defense, including the report, responses to the reviewer's comments). In the event of a dispute, the Chairman of the State Examination Commission has the casting vote.

2.4.5 Resources and material and technical base required for implementation

In their work on the final Master's Thesis, students use materials from external resources — libraries and archives, the resources of the HSE library, as well as electronic information resources provided by the HSE library by special subscriptions: databases of domestic and foreign periodicals, databases of scientific citation, databases of electronic books, dictionaries and encyclopedias, databases of digital images.

2.4.6 Features of performing tasks under restrictive or other measures

In the conditions of restrictive measures, stationary passage (if it is the norm in normal conditions) by the decision of the University or, in the case of delegation of these powers to the educational program, the Academic Council of the educational program can be replaced by remote. Other features of performing tasks under restrictive measures depend on the nature of the restrictions and are specified by the governing bodies of the University, Faculty or educational program.

SECTION 3. Features of the organization of training for persons with disabilities and the disabled

Practical training of students with disabilities and disabled people is organized taking into account the peculiarities of psychophysical development, individual capabilities and health status. If necessary, students from among persons with disabilities (at the request of the student) and for the disabled, also in accordance with the individual rehabilitation program of the disabled person, the following options for the perception of educational information can be offered, taking into account their individual psychophysical characteristics, including the use of e-learning and distance technologies:

- for persons with visual impairments: in printed form in enlarged font; in the form of an electronic document; in the form of an audio file (translation of educational materials into audio format); in printed form in Braille; individual consultations with the involvement of a typhoid translator; individual assignments and consultations;
- for persons with hearing impairments: in printed form; in the form of an electronic document; video materials with subtitles; individual consultations with the involvement of a sign language interpreter; individual tasks and consultations;
- for persons with disorders of the musculoskeletal system: in printed form; in the form of an electronic document; in the form of an audio file; individual assignments and consultations.

For the disabled and persons with disabilities, the choice of places for internships should take into account the state of health and accessibility requirements for these students.