

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution for Higher Education
«North-Caucasus Federal University»

APPROVED BY

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Educational Practice Program

Research Work

(Obtainig basic research work)

Field of study	13.04.02 Electric Power Engineering and Electrical Engineering
Specialization (Profile)	Training Program of Electrical Engineering
Year of commencement of studies	2026
Mode of study	full-time
Implemented in semester(s)	3

DEVELOPED BY:

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1. Objectives of the Practice

The objectives of the educational practice "Research Work (Acquisition of Primary Skills in Research Work)" in the field of study 13.04.02 Electric Power Engineering and Electrical Engineering are to prepare for a conscious and in-depth study of general professional and specialized disciplines, and to acquire practical skills in organizing professional activities and handling technological means for the development and maintenance of documentation.

2. Tasks of the Practice

The objectives of the practice are:

- acquiring experience in researching a current scientific problem, as well as selecting the necessary materials for the completion of the final qualifying work;
- systematizing the theoretical knowledge acquired during the learning process, as well as expanding and deepening it within the framework of a limited scientific problem;
- improving practical skills and abilities in solving a scientific problem in the field of electric power engineering and electrical engineering;
- developing skills in independent research and experimental methodological work, as well as using a variety of scientific tools in the form of research methods, techniques, and approaches;
- determining the theoretical and practical preparedness of the graduate to perform professional tasks corresponding to their qualifications.

3. Place of the Practice in the Structure of the Higher Education Program

The practice belongs to Block 2. Practice, Mandatory Part. The completion of the practice is based on the discipline "Research Methodology."

4. Place and Time of the Practice

The bases for the educational practice of students in the field of study 13.04.02 "Electric Power Engineering and Electrical Engineering" are the structural units of the university equipped with modern equipment and testing instruments. The duration of the practice is established in accordance with the academic plan and the academic calendar for the corresponding academic year. The total duration of the practice is 18 weeks, distributed throughout the period.

5. List of planned results of the practice, mapped to the planned results of mastering the educational program

Competency code and formulation	Indicator code and formulation	Planned results describing the stages of competency and indicator formation
UC-1 Capable of conducting critical analysis of problem situations based on a systems approach and developing an action strategy	ID-1UC-1. Searches for the required information, performs its critical analysis, and consolidates the analysis results to solve the assigned task;	Performs a search for information according to a given query using specialized information resources; systematizes and summarizes information, draws conclusions

	ID-2 ^{UC-1} Analyses a problem situation and performs its decomposition into individual tasks;	Formulates the task, determines the composition of subtasks
	ID-3 ^{UC-1} . Develops a strategy for solving the assigned task.	Determines the stages of solving the task, assesses the timelines and resources for completing each stage
UC-6 Capable of identifying and realising the priorities of one's own activities and ways of improving them based on self-assessment	ID-1 ^{UC-6} . Assesses one's own resources and their limits (personal, situational, temporal), and uses them optimally to successfully complete an assigned task;	Rationally distributes time and material resources
	ID-2 ^{UC-6} . Identifies the priorities of personal growth and ways to improve one's own activities based on self-assessment.	Determines the trajectory of personal and professional development
GPC-1 Capable of formulating research objectives and tasks, identifying task-solving priorities, and selecting evaluation criteria	ID-1 ^{GPC-1} . Formulates research objectives and tasks;;	Determines the final goal, defines the object and subject of the research, determines the set of tasks necessary to achieve the goal
	ID-2 ^{GPC-1} . Determines the sequence for solving tasks;	Determines the stages of solving the task, assesses the timelines and resources for completing each stage
	ID-3 ^{GPC-1} Formulates decision-making criteria.	Determines the criteria for achieving the goal, formulates decision-making criteria based on research results
GPC-2 Capable of applying modern research methods, evaluating and presenting the results of completed work	ID-1 ^{GPC-2} . Selects the appropriate research method to solve the assigned task;	Performs a comparative analysis of research methods, determines the rational research method based on the stated goals
	ID-2 ^{GPC-2} . Conducts analysis of the obtained results;	Performs various types of analysis (visual, statistical, classification, etc.)
	ID-3 ^{GPC-2} . Presents the results of the completed work.	Presents the results of the work in various formats suitable for further evaluation and use

6. Structure and content of the practice

The total workload of the educational research work (acquisition of primary skills in research work) practice is 6 credit units, 216 hours.

Sections (stages) of practice	Competencies /indicators implemented	Types of academic work during the practice, including independent work	Labor intensity (hours)	Labor intensity (hours)
Introductory lecture	ID-1 _{GPC-1} ID-2 _{GPC-1} ID-3 _{GPC-1} . ID-1 _{UC-6} ID-2 _{UC-6} ID-1 _{UC-1} ID-2 _{UC-1} ID-3 _{UC-1} ID-1 _{GPC-2} ID-2 _{GPC-2} ID-3 _{GPC-2}	Familiarization with the practice program, consultations on issues arising during the educational practice	2	Interview
Safety briefing	ID-1 _{UC-1} ID-1 _{UC-1}	Familiarization with safety instructions	2	Interview
Formulating the goals and objectives of the research	ID-1 _{GPC-1} ID-2 _{GPC-1} ID-3 _{GPC-1} .	Work on the individual assignment	4	Interview
Developing a work plan for conducting the research	ID-2 _{UC-1} . ID-3 _{UC-1} ID-1 _{GPC-2} ID-1 _{UC-6} .	Work on the individual assignment	4	Interview
Collection of materials	ID-1 _{GPC-1} ID-2 _{GPC-1} ID-3 _{GPC-1} . ID-1 _{UC-6} ID-2 _{UC-6} ID-1 _{UC-1} ID-2 _{UC-1} ID-3 _{UC-1} ID-1 _{GPC-2} ID-2 _{GPC-2} ID-3 _{GPC-2}	Work on the individual assignment	100	Interview
Systematization of factual and literary material	ID-3 _{GPC-1} ID-1 _{GPC-2}	Independent work	60	Interview
Processing of factual material	ID-3 _{GPC-1} ID-1 _{GPC-2} ID-2 _{GPC-2}	Work on the individual assignment	36	Interview
Preparation of the practice	ID-3 _{GPC-2}	Formatting the report	8	Defense of the practice

The practice is implemented in the form of practical training. Practical training is a form of organizing educational activities during the completion of an educational program, under which students perform specific types of work related to their future professional activities and aimed at forming, reinforcing, and developing practical skills and competencies relevant to the profile of the corresponding educational program.

7. Methodological recommendations for students on completing the practice

7.1 Use of the educational and methodological materials of the practice

At the first stage, it is necessary to familiarize yourself with the structure of the practice, mandatory types of work and forms of reporting.

For the successful completion of assignments for the educational practice "Research Work (Acquisition of Primary Skills in Research Work)" in the field of study 13.04.02 Electric Power Engineering and Electrical Engineering, the student must prepare and defend a report in accordance with the received individual assignment.

7.2 Assessment tools for the practice

The assessment tools for the educational practice "Introductory Practice" are based on the list of competencies to be mastered, indicating the stages of their formation during the practice. The assessment tools ensure objective monitoring of the achievement of the planned learning outcomes. The assessment tools include:

- a description of indicators and criteria for assessing competencies at various stages of their formation, and a description of grading scales;
- methodological materials defining the procedures for assessing knowledge, skills, abilities, and/or experience of activities that characterize the stages of competency formation;
- standard control tasks and other materials necessary for assessing knowledge, skills, and the level of mastery of the competencies being formed during the practice.

8. Educational, methodological and informational support of the practice

8.1. Recommended literature

8.1.1. Basic literature

1. Egoshina, I. L. Research Methodology : textbook : [16+] / I. L. Egoshina ; Volga State University of Technology. -- Yoshkar-Ola : Volga State University of Technology, 2018. -- 148 p. -- Access mode: by subscription. -- URL: <https://biblioclub.ru/index.php?page=book&id=494307>. -- Bibliography: p. 133. -- ISBN 978-5-8158-2005-0. -- Text : electronic.

2. Shklyar, M. F. Fundamentals of Scientific Research : textbook : [16+] / M. F. Shklyar. -- 9th ed. -- Moscow : Dashkov i K°, 2022. -- 208 p. : tables. -- (Educational Publications for Bachelors). -- Access mode: by subscription. -- URL: <https://biblioclub.ru/index.php?page=book&id=684505>. -- Bibliography: pp. 195-196. -- ISBN 978-5-394-04708-4. -- Text : electronic.

8.1.2. Additional literature

1. Novikov, A. M. Methodology of Scientific Research : educational and methodological manual : [16+] / A. M. Novikov, D. A. Novikov. -- Moscow : Librokom, 2010. -- 284 p. -- Access mode: by subscription. -- URL: <https://biblioclub.ru/index.php?page=book&id=82773>. -- ISBN 978-5-397-00849-5. -- Text : electronic.

2. Krasnostanova, M.V. From an Inventive Team to a Hi-Tech Corporation: Human Factors and Dynamics of an Innovation Project : textbook / M.V. Krasnostanova. - M. : RG-Press, 2014. - 88 p. : diags. - Bibliography in the book. - ISBN 978-5-9988-0270-6 ; Same [Electronic resource]. - URL: <http://biblioclub.ru/index.php?page=book&id=276547>.

8.1.3. Methodological literature

1. Methodological Guidelines for Completing the Educational Practice "Research Work (Developing Foundational Research Skills)" in the Field of Study 13.04.02 "Electric Power Engineering and Electrical Engineering"

8.1.4. Internet resources

1. <http://catalog.ncfu.ru> – electronic catalogs of the Association of Electronic Libraries of Educational Institutions and Organizations of the North Caucasus Federal District.
2. <http://elibrary.ru> – Scientific Electronic Library [eLIBRARY.RU](http://elibrary.ru)
3. <https://biblioclub.ru/> Electronic Library System "University Library Online"
4. www.iprbookshop.ru – Electronic Library System IPRbooks
5. <https://www.rosseti.ru/> - Website of the Rosseti Group of Companies

8.2. Software:

No special software is required.

9. Material and technical support of the practice

A classroom equipped with specialized furniture and technical teaching aids used for presenting educational information to a large audience: personal computers, an instructor's computer, a projector, and a magnetic marker board.

10. Features of Completing the Practice for Persons with Disabilities

Students with disabilities are provided with special textbooks, teaching aids and didactic materials, special technical means of learning for collective and individual use, services of an assistant who provides students with the necessary technical assistance, as well as sign language interpreting and typhlo-sign language interpreting services. Completing the practice by students with disabilities may be organized together with other students, as well as in separate groups.

Completion of the practice by students with disabilities is carried out taking into account the characteristics of psychophysical development, individual capabilities and health status. In order to ensure accessibility of higher education under the educational program for persons with disabilities during the practice, the following is provided:

- 1) For persons with visual disabilities:
 - presence of an assistant who provides the student with the necessary technical assistance taking into account individual characteristics (helps to take a seat, move around, read and complete the task, including writing under dictation);
 - written assignments, as well as instructions on the procedure for their completion, are formatted in enlarged font;
 - special textbooks, teaching aids and didactic materials (with large print or audio files);
 - individual uniform lighting of at least 300 lux;
 - if necessary, a magnifying device is provided to the student for completing the task.
- 2) For persons with hearing disabilities:
 - presence of an assistant who provides the student with the necessary technical assistance taking into account individual characteristics (helps to take a seat, move around, read and complete the task, including writing under dictation);
 - provision of collective sound amplification equipment; if necessary, the student is provided with individual sound amplification equipment;
 - provision of appropriate sound means of information reproduction.
- 3) For persons with musculoskeletal disorders (including those with severe motor impairments of the upper limbs or absence of upper limbs):
 - written assignments are performed on a computer with specialized software or dictated to an assistant;
 - at the student's request, assignments may be completed orally.