

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 1 out of 11
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## METHODOLOGICAL GUIDELINES

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### PROCEDURE OF ORGANIZING AND CONDUCTING LABORATORY, PRACTICAL AND SEMINAR CLASSES

MG V-09-2022

Developed by Director of the DAA  
Udartseva S.M.



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NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines</b> <b>Procedure of Organizing and Conducting</b> <b>Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 2 out of 11
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## Table of Contents

1	Scope	3
2	Regulatory references	3
3	Terms, definitions and abbreviations	3
4	General provisions	4
5	Requirements to organizing and conducting laboratory, practical and seminar classes	5
6	Procedure of conducting practical and seminar classes	6
7	Rights, responsibility and duties of the teacher	7
8	Rights, responsibility and duties of students	7
9	Approval, negotiation and implementation	7
10	Ensuring the availability	7
11	Storage	7
12	Analysis and updating	7
13	Making changes	8
	Appendix A Coordination sheet	9
	Appendix B Familiarization sheet	10
	Appendix C Bibliography	11

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 3 out of 11
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## 1 Scope

These Methodological Guidelines establish the procedure of organizing and conducting laboratory, practical and seminar classes in specialties and areas of training for higher professional education at NLC "Abylkas Saginov Karaganda Technical University".

These Guidelines are used by employees and students of all the faculties of NLC "Abylkas Saginov Karaganda Technical University" and is a part of the internal regulatory documents of the quality management system (QMS).

## 2 Regulatory references

These Methodological Guidelines use references to the following regulatory documents:

DP X-01-2022 "Management of documented information".

R V-08-2022 "General requirements for the presentation of text educational documents and basic inscriptions".

MG V-06-2022 "General requirements to graphic documents".

R X-01-2022 "Rules of designing the educational and methodological complex".

R X-05-2022 "Rules of designing educational and methodological literature".

## 3 Terms, definitions and abbreviations

In the Methodological Guidelines, the following terms are used with their respective definitions and abbreviations:

- training session: a type of educational process conducted in the classroom and extracurricular forms, which consists in the performance by students under the guidance of a teacher of actions aimed at achieving the learning objectives defined in the State Educational Standard of the specialty (training areas) and the working curriculum;

- laboratory class: a type of training session aimed at mastering the theoretical foundations of an academic discipline and obtaining practical research skills by staging, conducting, processing and presenting the results of an experiment based on the practical use of instruments, equipment, technical and instrumental means, computer technology;

- laboratory work: a specific educational task for the course being studied, performed in a laboratory lesson;

- educational laboratory: a laboratory equipped with instruments, equipment, technical, instrumental means, computers for carrying out work on a specific topic (discipline).

- University: NLC "Abylkas Saginov Karaganda Technical University";

- MG: Methodological Guidelines;

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 4 out of 11
--	---	---

- OSHR: occupational safety and health regulation;
- DAA: Department of Academic Affairs;
- CQM&A: Center for Quality Management and Accreditation;
- QMS – quality management system.

#### **4 General provisions**

4.1 Laboratory, practical and seminar classes are the main types of training sessions aimed at experimental confirming theoretical positions and forming educational and professional practical skills. They are an important part of theoretical and professional practical training.

4.2 The targets are as follows:

4.2.1 Laboratory classes: practical development by students of the content and methodology of the discipline under study using special technical means.

4.2.2 Practical and seminar classes: development of cognitive abilities, independent thinking and creative activity of students.

4.3 The tasks are as follows.

4.3.1 Laboratory studies:

- student mastering the methodology of experimentation in the relevant branch of science, engineering and technology;

- gaining experience in solving educational, research and real practical problems based on the studied theoretical material;

- acquiring experience in conducting the experiment;

- forming skills for processing the results of research;

- forming skills of registration and presentation of the results of the research;

- analyzing and discussing the obtained results, and formulating conclusions.

4.3.2 Practical and seminar classes:

- consolidating, deepening and expanding knowledge of the academic discipline;

- teaching students practical techniques and methods of analyzing theoretical provisions and concepts of the academic discipline;

- acquiring by students skills and abilities to use modern theoretical and scientific and technical methods and devices in solving specific practical problems;

- studying and analyzing literature sources on a specific topic of the academic discipline.

4.4 Laboratory classes should be conducted in educational laboratories provided with the needed instruments and equipment, technical and instrumental means that meet sanitary and hygienic standards and occupational safety and health protection requirements. The material and technical support must correspond to the modern level of the experiment in the relevant branch of science and technology.

4.5 The forms of practical exercises are as follows:

- solving thematic problems;

- performing exercises, training;

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 5 out of 11
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- conducting business games;
- other activities due to the specifics of the studied academic disciplines.

4.6 The forms of conducting seminars can be:

- discussing messages and reports of students on the most important topics of the academic discipline;
- discussing specific issues of the academic discipline according to the lesson plan;
- discussing initiative tasks and questions proposed by students;
- analyzing theoretical provisions and concepts of the academic discipline;
- constructive discussion;
- "round table" seminar;
- "brainstorming" seminar;
- "excursion" seminar;
- method of "small groups";
- method of "press conference";
- the method of "commenting on primary sources";
- "business game" seminar, etc.

## **5 Requirements to organizing and conducting laboratory, practical and seminar classes**

5.1 The basis for conducting laboratory work on the discipline is the following documents:

- the working curriculum of the discipline, executed in accordance with:

R V-08-2022 "General requirements for the presentation of text educational documents and basic inscriptions",

R X-01-2022 "Rules of designing the educational and methodological complex",

R X-05-2022 "Rules of designing educational and methodological literature";

- the schedule of training sessions.

5.2 A laboratory work on the topic (section) of the discipline should not, as a rule, be ahead of the corresponding lectures.

5.3 In the introductory (first) class, the teacher is required to instruct on the rules of safety and labor protection while in the training laboratory and during laboratory work. The briefing is mandatory recorded in the H&S register, available at each laboratory.

5.4 At the end of the class, the teacher evaluates the work of students by checking the report and/or defending it (an interview).

5.5 Conducting a laboratory work includes:

- extracurricular training of the student on the topic of laboratory work;
- initial checking the student's preparation for laboratory work: mastering the theoretical material, the procedure for conducting work, knowledge of the requirements for OSHR, the requirements for the report;
- performance of laboratory work;

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 6 out of 11
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- preparation of the report and its defense during the next laboratory session or at the hours specified by the teacher, and its assessment in rating points;
- formation of milestone and final ratings of students based on the results of laboratory work.

5.6 Laboratory classes should be provided in sufficient volume with the necessary methodological materials including a set of guidelines for the cycle of laboratory work in this discipline.

Methodological materials must meet the requirements of R V-08-2022, MG V-06-2022.

5.7 Requirements for the report of the laboratory work

5.7.1 The report is a document indicating the completion of the task by the student, and should include:

- a title page;
- purpose and objectives of the laboratory work;
- the main part (characteristics of the object of study, method of work, description and/or drawings of the installation (instrument), results of experiments (measurements), processing of results, error assessment and analysis of error sources, discussion of results, conclusions);
- answers to control questions, problem solving;
- a list of sources used;
- appendices (if needed).

5.7.2 The report of the laboratory work is performed in a workbook, or on A4 sheets. Depending on the characteristics of the cycle of the laboratory work, the report is compiled by each student individually, or a general report for a subgroup (team) of 3-4 students.

5.7.3 It is permitted, in agreement with the teacher, to submit a report on the laboratory work in electronic form. At this, the documentation of the presented electronic version is carried out by the teacher.

5.8 Practical and seminar classes are organized and conducted in accordance with the work program of the academic discipline.

5.9 Practical and seminar classes are held for an academic group of students.

5.10 Practical and seminar classes should be provided with methodological guidelines, the needed educational, information and reference literature, software.

5.11 The results of practical and seminar classes should be recorded according to the schedule of monitoring the knowledge of students in the register of groups in accordance with the module rating system.

## **6 Procedure of conducting practical and seminar classes**

6.1 The topic of the class is formulated; its significance and connection with the other academic disciplines and activities are explained.

6.2 The readiness of students is checked.

6.3 The class is held in accordance with the working curriculum and according to

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 7 out of 11
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the subject.

6.4 The results are summed up with the rating of students.

## **7 Rights, responsibility and duties of the teacher**

7.1 The teacher has the right to determine the content of practical and seminar classes, to select the methods and means of their implementation ensuring a high quality of the educational process.

7.2 The teacher is responsible for organizing and conducting practical and seminar classes in accordance with the requirements of these MG and current regulatory documents related to the content and methodology of conducting classes.

7.3 The teacher is obliged to conduct classes in accordance with the syllabus, the calendar plan and ensure the formation of the necessary competencies and learning outcomes.

## **8 Rights, responsibility and duties of students**

8.1 A student is obliged to arrive at the practical or seminar lesson at the time set by the schedule with the necessary preliminary preparation, to observe the principles of academic integrity.

8.2 A student has the right to complete the tasks of practical (seminar) classes missed for a good reason, during consultation hours agreed with the teacher.

8.3 A student is responsible for:

- missing a practical (seminar) class for an unexcused reason;
- unpreparedness for a practical (seminar) class;
- untimely delivery of assignments.

## **9 Approval, negotiation and implementation**

The approval of this MG is carried out with the QMR the Board Member - Vice-Rector for Academic Affairs and is made out in the "Approval Sheet" (Appendix B).

The date of introduction of the document is the date of negotiation/approval of the document. The document comes into effect at the time of its approval.

## **10 Ensuring the availability**

The provision of units with copies of this MG is carried out by posting on the website.

## **11 Storage**

The storage of this MG is carried out in accordance with DP X-01-2022.

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 8 out of 11
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## **12 Analysis and updating**

Verification, analysis and updating of this MG is carried out in accordance with DP X-01-2022.

## **13 Making changes**

Making changes to this MG are made in accordance with DP X-01-2022.





Appendix B  
(mandatory)

Familiarization sheet

F.02-2022

Position	Name	Date	Signature

NLC "Abylkas Saginov Karaganda Technical University"	<b>Methodological Guidelines Procedure of Organizing and Conducting Laboratory, Practical and Seminar Classes</b>	MG V-09-2022 Version 01 Date 2022.11.02 Page 12 out of 11
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[2] The state mandatory standard of higher and postgraduate education, approved by the Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2.

[3] Zakon Respubliki Kazahstan «Ob obrazovanii» ot 27 iyulya 2007 goda №319-III ZRK.

[4] Pravila organizacii uchebnogo processa po kreditnoj tekhnologii obucheniya (prikaz Ministra obrazovaniya i nauki Respubliki Kazahstan ot 20 aprelya 2011 goda №152)

[5] Ustav NLC "Abylkas Saginov Karaganda Technical University".

[6] Pravila vnutrennego rasporyadka NLC "Abylkas Saginov Karaganda Technical University".