

FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION  
OF HIGHER EDUCATION  
"STAVROPOL STATE AGRARIAN UNIVERSITY"

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Rector of FSBEI HE  
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*February* 2017

## REPORT

### ON SELF-INSPECTION OF THE EDUCATIONAL PROGRAMS CLUSTER IN THE TRAINING DIRECTIONS OF:

«Power and electrical engineering» (13.03.02, 13.04.02),  
additional program of professional training  
«Management of labor safety»

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Stavropol, 2017

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## **INTRODUCTION**

In modern conditions of modernization of the national educational system the importance of the training quality is increasing. The purpose of this report is to identify the relevance of the cluster of educational programs in the fields of "Power and electrical engineering" (13.03.02, 13.04.02), additional professional program "Management of labor safety" by the "Stavropol State Agrarian University" according the requirements of the European Standards and Guidelines (ESG) of the European Association for Quality Assurance in higher education (ENQA) in the following areas:

- policy and strategy of assurance of education;
- system of development, approval monitoring and improvement of education;
- admission, education, success evaluation and support of academic achievement of students;
- competence of teaching staff;
- the sufficiency and availability of educational resources and a support system for students;
- the information management system; informing the public about the quality of education;
- procedures for internal and external monitoring of education.

Self-examination is a necessary preliminary step in the external examination of the basic professional educational programs. The purpose of self-examination is to establish the conformity of quality of training of graduates of accredited educational programs standards and criteria of the international professional-public accreditation of the National Centre for Public Accreditation.

During the self-examination the analysis of the content, level and quality of graduates, the content of accredited educational programs and conditions of their implementation, identified strengths and weaknesses of the educational activities performed assessment of the evolution of educational programs, state of material and technical base, the level of training requirements of the Federal State Educational Standards of Higher Education.

## I. GENERAL INFORMATION

**Table 1 – GENERAL INFORMATION about OO**

Full title OO	<i>Federal Government Budget Educational Institution of Higher Education «The Stavropol State Agrarian University»</i>
Founders	<i>Ministry of Agriculture of the Russian Federation</i>
Founded	<i>1930 the Institute of sheep breeding 1933 the North-Caucasus zootechnical Institute 1944 the Stavropol Agricultural Institute 1994 the Stavropol state agricultural academy 2001the Stavropol state agrarian university</i>
<i>The current state accreditation status</i>	
Location	<i>Stavropol, Zootechnical lane,12</i>
Rector	<i>Vladimir Ivanovich Trukhachev</i>
License	<i>Series №90Л01 № 0008917, registration №1887 of 20.01.2016. Duration – permanent</i>
State accreditation	<i>Certificate of state accreditation Series 90A01 №0001847, registration №1754 of 17.03.2016. Duration until 29.04.2020</i>
Number of students	<i>9699 out of them: full-time 5199 full-time-part-time 40 part-time 4460</i>

**Table 2 – Information about OP submitted to the accreditation**

EducationalPrograms	<i>«Power and electrical engineering» (13.04.02), «Power and electrical engineering» (13.03.02), «Management of Labor Safety»</i>
Educational Level / Educational Time	<i>master's degreeprogram (MSC)/ 2 years academic bachelor's degree program (BSC) / 4 years professional retraining / 258 academic hours</i>
Structural Division (Head)	<i>Power and electrical engineering Faculty Mastepanenko Maxim Alekseevich, Ph.D. in Technics</i>
Departments / Heads of Departments	<i>Supply and operation of electrical equipment EfanovAlexeyValerievich, Ph.D. in Technics</i>
ExaminationPeriod	<i>March 28-30, 2017</i>
<i>Responsible for the Accreditation</i>	<i>Khokhlova Elena Vasilevna–head of the center for quality management education; Mastepanenko Maxim Alekseevich – Dean of the Power and electrical engineering Faculty; Efanov Alexey Valerievich – supervisor of the Educational program –Power and electrical engineering (13.03.02); Khorolsky Vladimir Yakovlevichsupervisorof the Educational program –Power and electrical engineering–(13.04.02)</i>

**Table3 – Enrollment of students in 2016**

<b>Directionoftraining</b>	<b>Enrollment of full-time students</b>
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Power and electrical engineering (13.03.02)	50
Power and electrical engineering(13.04.02)	15
ManagementofLaborSafety	72

## **II RELEVANCE TO STANDARTS OF PROFESSIONAL AND PUBLIC ACCREDITATION OF THE NATIONAL ACCREDITATION CENTRE**

### **2.1 Standard 1. Policy (targets, development strategy) and quality assurance of educational programs procedures**

The mission of the Stavropol State Agrarian University is to expand the frontiers of knowledge and learning, to provide training for graduates and professionals to improve the quality of life of the population of the South of Russia and to promote preservation and multiplication of moral, cultural and scientific values of the society.

In accordance with the Mission of the University the Mission of each educational program in the cluster programs 13.00.00 "Electro - and heat power engineering" is clearly defined (<http://www.stgau.ru/obschinf/information/oop/>).

In each educational program of cluster 13.00.00 "Electro - and heat power engineering" (13.03.02 Power and Electrical engineering, profile "Power Supply", 13.04.02 Power and electrical engineering, profiles "Power Supply" and "Optimization of developing power supply systems") goals and objectives are formulated, documents regulating their content, as well as organization and quality control of the educational process are developed and approved. These documents are available on the University website and can be accessed from any computer (<http://www.stgau.ru/obschinf/information/oop/>), provided the resource support of educational programs, methods, achievements and adjustments of the goals and objectives of educational programs. They are fixed and published in the "Basic professional educational programs of higher professional and postgraduate education" (hereinafter – ОПОП).

In the development of ОПОП involved employees of departments engaged in the training of graduates in educational programs, students, alumni, representatives of professional communities. A final version of the ОПОП is approved by the Rector of the University and signed by the representatives of the faculties (Dean, heads of departments).

Methods of achieving objectives in educational programs developed and approved by the following structures: the Regulation on University quality control of the educational process of the Stavropol GAU - routine (complex) or operational (control) verification of educational and methodical work of Departments and Dean-offices; the internal control of classes by Departments; current, operational and planned individual control of classes; the Regulations on the score-rating system of knowledge assessment of students according to educational professional programs of the Stavropol GAU; of midterm certification of students of the Stavropol GAU; about

certification of a graduate student (the applicant) for the year of study; the Regulations on the procedure of acceptance tests and examinations of the Stavropol GAU and other provisions.

The results of monitoring the achievement are discussed at the Educational Commission, which makes decisions about those students who have deviations in achieving the goals. Results of certification of graduate students are discussed at the Departments meetings or Academic Council of the Faculty.

In the process of improving the quality of educational programs are widely used the results of surveys of students and employees that is held by the Department of sociological research and marketing of the Centre for quality management education (Appendix 1).

The long term view presented to the accreditation of educational programs in a cluster of programs for the enlarged group 13.00.00 "Electro - and heat power engineering" (13.03.02 Power and Electrical Engineering, profile "Power Supply", 13.04.02 Power and Electrical Engineering, profiles in "Power Supply" and "Optimization of developing power supply systems") presented in the Concepts of development of educational programs.

In the framework of the Concept and the Program of strategic development of international activities of the University various programs for international cooperation, perspectives for the future are implemented.

To ensure the effective system of management in 2004 the University developed, certified and implemented the Quality Management System according to international standard ISO 9000. In 2011, the University again passed recertification and received a certificate of compliance with ISO 9001:2008. Mission, Policies, awards of the University in the field of quality are placed on the University website on the Center for quality management education (<http://www.stgau.ru/cuko/un-awards/>). Quality assurance of the educational program is provided by:

- internal system of self-evaluation (quality of applicants' knowledge; quality of resources; quality of teaching; qualification of the teaching staff; quality of educational programs; quality of educational infrastructure; competence of graduates);

- external evaluation of the educational activities of the University (public-professional accreditation through the International Association of public academies of Sciences, 2008 – attachment 2; public-professional accreditation of educational programs by the Agency of public control of education quality and career development, 2010 – Appendix 3);

- evaluation of the activities of the University in accordance with the requirements of Russian and international standards in the field of quality (the University is twice Winner of the RF Government prize in the field of quality in 2005, 2011. – Appendix 4, 5; Finalist, Prize Winner, Prize Winner in the European contest "Award of Excellence" (EFQM "ExcellenceAward" in 2008, 2010, 2013 – Appendixes 6, 7, 8; 9; the winner of the competition of the Ministry of Education and Science of the Russian Federation "Systems of quality of preparation of graduates of educational institutions of professional education" in the nomination "Recognized Excellence" 2010 – Appendix 10).

Information about educational programs and their achievements published on the pages of the faculties on the University website

([http://www.stgau.ru/company/?set\\_filter\\_structure=Y&structure\\_UF\\_DEPARTMENT=39&filter=Y&set\\_filter=Y](http://www.stgau.ru/company/?set_filter_structure=Y&structure_UF_DEPARTMENT=39&filter=Y&set_filter=Y)) in the section "Structure of the University. Faculties", in category "News of the Departments" and are accessible to a wide range of users. Also, this information is published in brochures, the University's newspaper, gift publications about the University, in reference publications about the institutions of higher education.

### **Conclusions on Standard 1:**

#### **Strong Points:**

1. The system of planning and accounting of educational-methodical and scientific work.
2. Method of achieving objectives: orientation of educational programs on the development of different profiles of bachelors and masters in specialty "Power and Electrical Engineering".
3. Training of graduates in SSAU for large industrial enterprises backed by demand for them

#### **Areas needing improvement:**

1. Improvement of information system of planning and accounting of educational-methodical and scientific work.
2. Expanding the range of ongoing Master's Degree programs.
3. Currently, the profiles of training in this area focused on the creation of modern high-tech electric power equipment and optimization of the existing one. In the future it is planned to develop profiles of training and relevant educational programs for automation of technological processes and production

### **2.2. Standard 2. The procedures for developing and approving of educational programs**

The coordination of educational process in high school, preparing of legal documents, monitoring and control of the development and implementation of educational programs at the university are carried out by educational process control center.

Development and approval of additional education programs is carried out by the Institute of additional professional education according to the requirements of professional standards (upon availability).

Methodical faculty committee works actively, considers and submits to the approval curricula of training courses and working programs of disciplines. In developing the curriculum takes into account SSAU's local normative documents, regulating the educational process, incl.:

- Regulation on the organization and implementation of educational activities on educational programs of higher education - bachelor's, master's and specialist's in FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015 was approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the educational programs of higher education - bachelor's programs, specialist's programs, master's programs and postgraduate programs in FSBEI of Higher Education Stavropol State

Agrarian University on 19.10.2016 was approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the current control of progress and interim assessment of students in FSBEI of Higher Education Stavropol State Agrarian University on educational programs of higher education of bachelor's, master's, specialist's on 12.10.2015, approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the point rating system of students' knowledge evaluation, enrolled in educational programs of higher education at FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015, approved by the rector FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the choice of studying disciplines during the development of the educational programs of higher education in FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol State Agrarian University, Trukhachev V.I.

- Regulation of student contact with the tutors at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015, approved by rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the organization of students independent work at FSBEI of Higher Education Stavropol SAU on bachelor's, master's, specialist's educational programs of higher education on 10.12.2015, approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the organization and carrying out of students practices mastering educational programs of higher education (bachelor's, specialist's, master's) in FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015 approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the procedure of the state final examination for educational programs of higher education - bachelor's, specialist's and master's programs at FSBEI of Higher Education Stavropol State Agrarian University on 30.06.2016., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the implementation and defence of final qualifying work at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the Fund of assessment tools for the current monitoring of progress and the interim assessment of students in the discipline at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the practices program and evaluation tools fund for intermediate certification of practices at FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the formation of the evaluation tools fund for the state final examination at FSBEI of Higher Education Stavropol State Agrarian



University on 10.12.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on students term papers (projects) of FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on providing the educational process with educational publications and other library and information resources at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the development, approval and change of the curricula of basic professional educational programs of higher education at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the implementation of the optional subjects and elective courses at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the procedure of physical training at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation of the electronic educational-methodical complex of discipline at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Strategy to ensure the quality of graduates training at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the educational - methodical commission of FSBEI of Higher Education Stavropol State Agrarian University on 10.12.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the educational - methodical Council of FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol SAU, Trukhachev V.I.

- Regulation on the organization of the educational process for the disabled and persons with disabilities at FSBEI of Higher Education Stavropol State Agrarian University on 12.10.2015., approved by the rector of FSBEI of Higher Education Stavropol State Agrarian University, Trukhachev V.I.

- Regulation on the Institute of supplementary vocational education of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- The procedure for the organization and educational activities for additional educational programs in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the professional development of academic staff, administrative, managerial and educational support personnel of federal

state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the probation of scientific and pedagogical workers of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the issuance of documents on the results of additional professional development and further education programs in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the use of e-learning and distance learning technologies in the educational process in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation for admission to the training program of additional education in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the appeal for admission to the training and conduction of the final certification of the program of supplementary vocational education in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University".

- Regulation on traineeship of enrolled in the program of supplementary vocational education at the Institute of additional vocational training of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the organization of the final assessment of students in the implementation of supplementary vocational education programs in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the organization of students training of supplementary educational and other professional programs on individual plans, including acceleration, in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- The procedure for approval of the internal quality assessment requirements of supplementary educational programs in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on types and forms of internal evaluation of the implementation quality of supplementary educational programs and their results in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on the driving school of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- The procedure for the organization and implementation of educational activities by main programs of vocational training in the federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

- Regulation on Labor Protection Center of the Institute of additional vocational training of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

• Regulation on the Training Center "Language Forum» of Institute of additional vocational training of federal state budgetary educational institution of higher education "Stavropol State Agrarian University."

The purpose (mission) of GPEP (General Provisions of Educational Programs) in "Power and Electrical Engineering" (13.03.02, 13.04.02): formation of abilities to synthesize, analyze, the perception of information, the ability to find organizational and managerial solutions to non-standard terms and conditions of different opinions and carry for responsibility, demonstrate a basic knowledge and a willingness to use the basic laws in their professional activities, to carry out calculations in accordance with standard procedures and to design individual parts and assemblies, to participate in the development of working and technical documentation, design of complete working and of technical documentation, design of complete design work, willingness to participate in the planning and carrying out routine testing of process equipment, readiness for self-training and training organization and training of production personnel.

The purpose of training programs for bachelor's and master's degree in the direction "Power and Electrical Engineering" is to prepare professionals with competencies for a successful professional applications as grid companies, as well as in housing and communal areas on the basis of modern technologies such profile as "Electricity".

The purpose of training programs "OSH Management" is the formation of students professional skills required to perform a new type of professional activity: planning, organization, control and improvement of occupational health and safety management in the organization.

The curriculum is fully consistent with FSES of Higher Education and provide the knowledge and skills sufficient to form both professional competencies and core competencies required for work in the active use of modern technologies, distributed project teams in international companies, large, medium and small enterprises of the electricity and electrical profiles.

Curricula are approved annually by the Academic Council. Steering documents in all areas are represented in all disciplines of the blocks, are according to modern requirements, including a list of literature. Programs are based on FSES of Higher Education, model programs and annotations of disciplines developed by specialized AMA (Academic Methodological Association).

All programs undergo an examination and approval of educational-methodical commission of the faculty.

The total duration of the theoretical training in all educational programs corresponds to FSES of Higher Education.

Training sessions schedule, examination schedule in this area are made according to the curriculum.

Group and individual counseling provided by curriculum are held during the semester on schedule.

Teaching load of departments and individual plans are formed according to the basis of the curriculum. Teaching load is determined by regulations adopted by the SSAU Academic Council and approved by the Rector's order. A rate of scientific and teaching staff is 900 hours per year.

This load level is optimal, increasing may lead to a decrease in the intensity of research, a decrease in the number of publications. Specialists from other organizations related to energy activities - Branch of "IDGC North Caucasus", JSC "Elektroavtomatika", JSC "Heating system" and others are involved for teaching (Appendix 11).

Steering documents of disciplines meet the goals, objectives and specific ongoing of GPEP. GPEP regulates the objectives, expected results, content, conditions and technologies of educational process, quality assessment of graduate training in this area of training and includes: curriculum, calendar training schedule, steering documents of training courses, programs, training and manufacturing practices, the state final certification program and other materials. The programs of disciplines agree the content and the logical sequence of presentation, reflects the relationship between the disciplines.

The ratio of lectures, laboratory, practical and self-study in the work programs is in strict accordance with the directions of educational plans. Steering documents are developed by tutors, who teach these subjects, are discussed at faculty meetings, educational and methodical commission of the Faculty and approved by the dean of the faculty.

Lectures on the areas "Power and Electrical Engineering" (13.03.02, 04.13.02) held only by lecturers with a science degree and academic rank. Material presented in lectures relevant curricula and high level, which is supported by specific examples, as well as scientific data obtained by members of the departments.

Classes are conducted with the use of illustrative materials, hardware, a great part of classes is conducted in an interactive form (round-table discussions, business games, brain-rings, master classes, classes in small groups, creative activities, excursions, etc.). According to FSES of Higher Education and to improve the quality of the material we practice open lectures, inviting representatives of the professions, binary lectures, lectures with the errors and others (Appendix 12).

Labs and workshops subjects are reflected in detail in the steering documents of disciplines and is fully consistent with the aims and objectives of courses. The steering documents of workshops reflect the goals and objectives of each class, checklists, the necessary materials and equipment. For laboratory workshops there were developed and published workbooks. Steering documents of disciplines, lecture, presentation material, checklists, guidelines are posted by employees in a personal area on the university site.

All the departments of the faculty are provided with methodical, educational and scientific literature, which provide a high degree of student's orientation for independent work.

Educational materials included in the TM reflect the modern level of development of science, provide a coherent presentation of the material, the use of modern means of intensification of the educational process, the different forms of organization. TM allow students to develop a deep study material and getting the skills to use it in practice, contribute to the formation of the future expert competencies in this area. Steering documents are subject to regular updating of disciplines. During the period

of attestation procedure at the Faculty the annual updating of working curriculum and working training programs was introduced.

Lecturers of the departments attend a refresher language courses.

Research and teaching staff of the faculty are constantly improving and upgrading educational activities, embed in the educational process new forms and methods of professional training. Innovative technologies of students training are aimed at improving education and knowledge quality (Appendix 14, 15). Among of the employed at the university modern forms and methods of teaching are business games, trainings, discussions, automated training systems based on information technology for computer control of students' knowledge, etc.

Management system of professional education program is focused on the hard work of the algorithm.

Practical training of students of faculty in all areas is systematized. Educational practice organizes for junior courses, for the senior - industrial practice (Appendix 16). Scientific research and research practice provide for students enrolled in the master's programs. The total duration of all types of practical training corresponds to the duration specified in FSES of Higher Education of training areas.

Vocational and practical training is implemented according to the program and guidelines for practitioners, published on the faculty in 2013-2016 (Appendix 17).

To improve the practical training of students, the Faculty come to arrangements a number of agreements on strategic cooperation and partnership, as well as agreements with enterprises and organizations of the Stavropol Territory on creative collaboration in joint educational activities and hands-on training. The most important of them are:

1. PC "IDGC NC - Stavropolenergo";
2. PC "Stavropol radio factory" Signal ";
3. PC "Stavropolenergobyt";
4. SUE NC "Stavropolkommunelektro";
5. PHC "Electroavtomatika";
6. PHC "ENERGOMERA";
7. PHC "Heating system".

Practical work of students is monitored on a weekly basis at the place of practice by the senior officials of departments and representatives of the employer. Leaders from the production practices give their opinion on the results of practical training of students. As a result of an industrial practice students draw up a report and a blog, which is checked by the heads of the practice company and member of a department. At the end of practices there is a discussion and adjustments are made to the training programs for core subjects, taking into account the wishes of the employer in terms of skills and abilities of students and the formation of competencies. In addition, it takes into account the results of the experts survey on the quality of training of graduates (proved currently).

Subject of term paper corresponds to the name of discipline and training profile of Bachelor and Master in areas of "Power and Electrical Engineering" (13.03.02, 13.04.02).

For each discipline of the curriculum there is estimated fund for the different forms of control (current, intermediate, final), as well as interdisciplinary competence-oriented tasks. Implementation of the basic educational program provides to each student access to databases, to e-library system, containing publications on studied subjects and formed on the basis of contracts with the owners of electronic library systems, on the page of the Scientific Library.

The university has developed and operates a system of students' knowledge assessment at different stages of the educational process. An innovative form of control is the use of score-rating assessment of students' knowledge of technology, which is used to:

- stimulate a systematic work of students, disclosure of their creative abilities, differentiation of knowledge evaluation;
- improve the objectivity and reliability of students' level of training evaluation.

Score distribution system according to the studied discipline is a mandatory attachment to the working program of discipline. There is documented system of quality procedure "Regulation on the score-rating system of assessment."

During conducting of periodic internal and external evaluation of the educational program are taken into account:

- analysis of state examination commissions chairmen reports (SEC) with aim to develop measures to implement corrections, shortcomings in the professional training of students identified during the state final examination;
- evaluation of educational programs in the framework of the AMA expertise;
- reviews of students and employers.

## **Conclusions to the standard 2:**

### **Strengths:**

1. Broadening the range of inter-university activities with the involvement of students: seminars, conferences, schools, seminars, workshops and trainings.
2. Curricula of "Power and Electrical Engineering" not only meet FSES of Higher Education, but also take into account the wishes of employers and students.
3. There is a perfect system of indicators and signs, which are carried out by evaluation activities.

### **Areas for improvement:**

1. Involvement students to the scientific-research work.
2. Increasing the number of leading scientists involved in the educational process at the university.
3. Not enough employers are involved in the business sphere.
4. Expansion of the system of indicators evaluating the effectiveness of an educational program with the introduction of quality indicators and their relationship with the educational process.

### **2.3. Standard 3. The student centered training and assessment procedures**

Identify the quality of training of students is based on the analysis assessment of introductory requirements, results of control of knowledge of disciplines of all blocks of the curriculum, intermediate and final state certifications of graduates. The commission for the state final examination according to the Federal state educational standards of higher education includes representatives of the professional community.

Results of certifications of students are brought to their attention and discussed monthly at meetings of the teaching and educational commission and on the academic council of faculties. As a result of the meetings decisions are conducive to remedy the situation.

The curriculum includes the study of elective courses students with distribution of the cycles. Disciplines at the choice of the student are offered by departments, by results of discussion and taking into account requirements of production, to competences and interests of students. The dean has courses meeting protocol of choice of course units. Students have the opportunity to undergo additional professional education programs.

An integral component of the educational process is an independent work of students, which is regulated by methodical instructions.

Independent work of bachelors occupies a half of training hours, masters - 70% and includes the following activities: elaboration of the lecture material; fulfillment of educational tasks of course units; learning on study guide of the program material; preparation for seminars, control points, laboratory work; drafting of reports, abstracts; perform term thesis and term projects, graduation thesis. The common forms of control of knowledge of students in self-study of course units are: the current poll, seminar, review work, colloquium, test control, essay, homework, workbook, abstract report. All forms of independent work are reflected in the work programs of course units and teaching materials.

The organization of scientific work at the electricity faculty is oriented to the solution of the strategic tasks facing the Stavropol State Agrarian University. It assumes carrying out the scientific research aimed at the development and enhancement of educational process and improvement of quality of training of graduates of all steps of education; the solution of applied research tasks with the subsequent implementation of R & D results; the search works directed to creation of the advancing scientific backlog; carrying out applied researches.

Scientific potential of students at the electricity faculty is implemented through students' scientific society within which work 39 research groups and Council of young researchers and experts of the electricity faculty (Appendix 18).

Students and masters take an active part in implementation of federal grant programs.

So, in 2015-2016 the state signed 7 public contracts according to the CLEVER MAN program and the START program of Foundation for Assistance to Small Innovative Enterprises in Science and Technology for an overall amount of 3,5 million rubles (Appendix 19). Thus, students already at a stage of training open the small innovative enterprises, receive the salary

(at least 13 000 rubles) and length of service in the specialty (professional experience). Students become not only highly skilled engineers, but also receive leadership skills. A striking example to it is the small business enterprise LLC R&D company MERAKONT (was opened in 2013). Its head is the sophomore year master Falko Kirill.

Students of faculty present results of the researches on projects the general public at the International and All-Russian exhibitions, tenders and grants (Appendix 20).

Thus, in 2015-2016 students of the faculty (training program "Power and Electrical Engineering" - 13.03.02, 13.04.02) received 14 gold and 2 bronze medals at exhibitions such as the International specialized exhibition "High technologies. Innovations. Investments" (Hi-Tech), St. Petersburg, 2015-2016; XXIV International agricultural exhibition "AGRORUS 2015-2016"; Russian agricultural exhibition "Golden Autumn 2015-2016"; All-Russian biotechnological trade fair "ROSBIOTECH".

And in 2015, a student of the faculty was first at the All-Russian tender "NATIONAL PROPERTY OF RUSSIA" in the category "Technical creativity of young people" (Appendix 21).

Growth by 3% of the total number of the students involved in scientific work at the faculty is annually noted.

The achieved targets are possible thanks to the opening at the faculty in 2008 within implementation of the National Education project of student's design office "SPEKTR" (Appendix 22).

In 2012-2016 on its base were realized 12 public contracts according to the CLEVER MAN program, 37 medals are got at the All-Russian and International exhibitions, 127 scientific articles are published.

On average in five years at the faculty are published 83 student's scientific articles with a maximum in 2016 when 1,3 publications are the share of one student involved in research work.

At the faculty is organized the system of the help in employment of graduates which begins with the advanced undergraduate and is performed before registration of the graduate on a specific workplace.

For this purpose are held meetings with the heads of graduates agricultural holdings, enterprises and holdings of the Southern region of the Russian Federation.

### **Conclusions according to the standard 3:**

#### **Strengths:**

1. The high status of the education at the faculty, including on profile disciplines, in regional community and considerable number of loyal potential consumers;
2. Intensity of the educational environment of faculty is caused by degree of her saturation conditions, influences and opportunities, and also a concentration of their manifestation.

#### **Areas for improvement:**

1. Expansion of a range of educational programs for the directions of preparation "Power industry and electrical equipment", and also transition to continuous two-level professional education on the basis of the single information and education environment.



2. Implementation of cross-cutting programs of an average and higher education.

3. Preserving and expansion of variety of forms of additional education of students.

#### **2.4. Standard 4. Acceptance, support of the academic achievements and release of students**

For attraction of various categories of potential entrants in the university is performed active studying of the Russian experiment on questions of the organization and enhancement of professional orientation work.

In 2016 for ensuring competitive level of all categories of students were held the following professionally oriented events: meetings with pupils, performances at PTA meetings, meetings with teachers, carrying out round tables, performances of propaganda teams, lecturing, holding the presentations, carrying out questioning, the organization of excursions in the university and at the enterprises, the organization of games and tenders. Professional orientation work covered 15 schools (83%) of Nevinnomyssk, 34 rural schools of 2 areas of Stavropol region, are made 27 visits to areas of Stavropol region and out of its limits. Professional orientation projects were implemented: "Open Days of the Stavropol state agricultural university", "School of geniuses", "Science, education, career". The main objectives are: acquaintance of potential entrants with university and its directions of preparation; for more conscious choice of profession with participants was held professional testing and a lecture hall about choice of profession; for identification of the moods and factors influencing choice of profession and educational institution was carried out questioning of professional intentions of pupils (Appendix 23).

At the faculty was held the VII competition of student's production teams. In the competitions "Electric" and "Inventor and Rationalizer" was attended by 93 students.

For improvement of information and professional oriented work for forming of the contingent of entrants in the directions of preparation at university are constantly conducted social researches.

Special attention was paid to expansion of geography of professional oriented actions: all areas of Stavropol region, certain areas of Krasnodar region and Rostov region, in Stavropol region professional oriented work covered 4 cities and 1830 school students.

The university performs purposeful training of entrants not only through training courses, but also popular scientific lecture-halls ("Mathematicians about mathematics" (for pupils of 10-11 classes), "We invite to a research" (for pupils of 8-9 classes), "The first steps in mathematical science" (for pupils of 5-7 classes), "In the world of computer sciences").

Within promoting of scientific and technical creativity of youth and professional oriented work and also within a cooperation with Small academy of Sciences of Stavropol region which organizes for many years the final of the district competitions "STEP to the FUTURE" of section of "Scientific and technical creativity" based on electricity faculty. The profile

class in the ROBOTICS and ENTERTAINING ELECTRONICS is open for her pupils (Appendix 24, 25).

Information on the implementable directions of preparation is posted on the website of university.

Rules and the procedure of acceptance (transference) of students from other educational organizations is based on "Regulations on an order of the transference, expulsion and recovery of students of the Stavropol State Agrarian University: special specifications of a quality management system 04.02/1-1.2015", and also based on "Regulation of admission of entrants in the Stavropol State Agrarian University in 2016/2017 academic year" and "Regulations of admission on Master's Degree course of the Stavropol State Agrarian University in 2016/2017 academic year", posted on the website of the university: <http://www.stgau.ru/>

According to the Charter of university monthly at faculties is carried out intermediate certification of students of all training programs on three-point system (2, 1, 0). In the appraisal sheet is also reflected the number of the points in subjects which are saved up for the period of assessment. Assessment is carried out in all subjects of the curriculum, its results are considered on the current offsets and examinations. To the students who aren't certified for 3 and more subjects, which skipped classes in the disrespectful reason, the teaching and educational commission and dean's office take measures of administrative influence (a reprimand, a serious reprimand on dean's office and university, letters and the invitation of parents, recommendations to expulsion).

Monitoring of quality of education at the level of dean's office of the faculty of electricity is carried out in the following directions:

- The systematic analysis of data on attendance and progress of students is carried out through the teaching and educational commission of group, course and faculty. Data on monthly certification of students and work of the teaching and educational commission are stored in dean's office of faculty. Information on attendance and progress of students is brought to the notice of parents of students by curators and dean's office of faculty.

- The analysis of sessions taking into account progress of students. Results of sessions are analyzed at meetings of the teaching and educational commission of group, a course and faculty and are stored in dean's office.

- Analysis of work of departments on the organization of independent work of students. In working programs, educational and methodical complexes of disciplines there are questions for independent studying. Control of independent work is exercised on control points, at control of performance of laboratory occupations.

- Organization of work of heads of groups on control of visit of lectures and practical training. Monitors have roll books in which they daily do marks about the number of the hours missed by students of group. Weekly data on admissions are noted in the roll book "Attendance by students" which is in dean's office of faculty.

- Analysis of attendance of students by staff of dean's office. Curriculum developers of dean's office carry out assessment of attendance of students selectively.

Chairs of faculty perform monitoring of quality of training of students and determine ways of its further enhancement, carry out work in the following directions:

- Current test check of knowledge. Control of knowledge is carried out on practical and laboratory practical in the form of oral poll, a colloquium, a seminar. Based on the current control of knowledge each teacher certifies students monthly. According to criteria of student's mark and rating assessment final assessment on subject can be exposed on the amount of cumulative points.

Independent work of students is regulated by methodical instructions. Control of independent work of students is carried out by teachers of chairs according to the working program of disciplines.

- Control of development of practical skills is carried out on a practical training, an educational and work practice.

One of the directions of practical training of students is participation in the international Erasmus Mundus programs. In the current year the master of the first year of training Shunina Anna within passing of the Erasmus Mundus program visits two lecture rates of university of the city the Udine, Italy (University of Udine, faculty of Engineering and architecture), course program "Electronic Engineering" and also courses of additional education: "Electric devices and components"; "Nanoelectronics and bioelectronics".

For support of talented youth in university are handed the academic grant and the award of the academic council of university to young scientists in the field of science and innovations, since 2010. Financial resources can be used for purchase of the laboratory equipment, the software or publications of results of intellectual activities.

For achievements in educational, scientific, sports and public life of university students of faculty are marked out by scholarships. In 2016 13 students are marked out by scholarships of the Russian President and the government of the Russian Federation, including 7 scholarships of the President of the Russian Federation and 3 scholarships of the government of the Russian Federation are issued to the students studying in the directions of preparation, the corresponding priority directions of upgrade and technology development of the Russian economy which list includes the directions of training of bachelors and masters "Power and Electrical Engineering" (13.03.02, 13.04.02).

Graduation theses of students have the practice-oriented character. Results of research work of students are used when performing graduation theses (Bachelor's theses, Master's theses).

For carrying out state final examination by the academic methodological association are approved questions for state exams in all directions of preparation. Preparation for a final assessment is carried out according to the provisions and the program of certification of educational institutions.

The state final examination is carried out at faculty in two steps. At the first stage students take a final complex qualification examination in the specialty. The second stage passes in a type of presentation of graduation theses. As part of state examination board are 50% representatives of

production of the direction of preparation with a work experience at least 3-5 years (Appendix 26).

#### **Conclusions according to the standard 4:**

##### **Strengths:**

1. The effective system of professional oriented work aimed at selection of the interested entrants.
2. Systems work of dean's office and departments on quality monitoring of study.
3. At university the system of support of the academic achievements of students is organized.

##### **Areas for improvement:**

1. To increase the number of graduation theses performed on requests of enterprises.
2. Availability and effectiveness of rules and procedures for acceptance and transference of entrants from one university to another, recognition of workforce skills, periods of study and access qualification.
3. Increase in participation of students in programs of mobility.

#### **2.5. Standard 5. Teaching personnel**

Educational process in the direction of preparation "Power and Electrical Engineering" is provided now with scientific and pedagogical workers in the quantity sufficient for high-quality training of specialists. So, 45 scientific and pedagogical workers from whom 4 doctors (8,9%), 5 professors (11%) and 38 candidates of science (84,4%) work at faculty in this direction. Availability of an academic degree on faculty constitutes 93,3% that allows to realize educational programs competently (Appendix 27).

In 2012-2016 the scientific and pedagogical staff of faculty published 225 study guidance and guidance manuals (Appendix 28).

So in 2016 total 49 study guidance are published from which 9 have classification of the Academic methodological association and are allowed by the Ministry of agriculture of the Russian Federation as the study guidance, 11 study guidance are published in the central publishing houses of Russia.

97,8% of the scientific and pedagogical workers who realize the main educational programs 13.00.00 "Electro-and heat power engineering" have either basic education or the academic degree corresponding to the taught subjects. The share of workers from among heads and employees of the organizations which activity is connected with the realizable educational program who have length of service in electrical power engineering not less than 3 years makes 10% of the total scientific and pedagogical workers who realize the main professional educational program.

At all departments of faculty active work on preparation and edition of educational and methodical literature is conducted in which results of the conducted scientific research are reflected.

All scientific and pedagogical workers occupied in educational process are engaged in scientific research which results are published in the form of scientific articles, for example, in 2016 the staff of faculty published 279 articles from which 31 articles are published in journals recommended by the All-Russian academic commission, 14 articles have citation index in

international citation bases SCOPUS and WEB OF SCIENCE (Appendix 29, 30).

In 2012 - 2016 scientific and pedagogical employees of faculty received 146 protection documents, including 62 patents for inventions and useful models, published 25 monographs (Appendix 31, 32).

High publishing activity and also interaction of faculty with the leading central journals have significantly increased scientometric index. At faculty the citation index constitutes 26 970, Hirsh's index - 20,4, in base of the Russian Science Citation Index the staff of faculty placed 3376 articles (Appendix 33).

Scientific and methodical work is planned by faculty within a scientific profile of the Stavropol State Agrarian University. Scientific and methodical activities of faculty are connected in particular and with development of new technologies of training. Open education around the world is considered as a possibility of a rational combination of various forms of education for achievement of maximum efficiency of educational process.

The main areas of work of the academic methodological association of faculty are:

- coordination of methodical work of departments according to the plans of methodical work of university accepted by the academic methodological association of faculty;
- consideration and issue of recommendations to the edition of study guidance and guidance manuals;
- consideration and issue of recommendations to the edition of e-learning and teaching aids;
- approval of the steering documents;
- problems of the teaching staff in implementation of the state examination;
- problems of the teaching staff in implementation of remote form of education at faculty;
- problems in implementation of multimedia and innovative training tools in educational process;
- organization of independent work of students at faculty;
- procedural guidelines of course units at faculty;
- preparing and carrying out scientific-methodical conference;
- problem of procedural guidelines in practice-oriented conception of learning.

Methodological work of departments is included as the independent section in work plans of scientific and pedagogical workers for an academic year. The questions which are considered within the meetings of the academic methodological association of faculty find the reflection and more detail reviewing during the meetings of departments that is confirmed with protocols and further practical implementation of the accepted decisions.

Now the dean's office and the academic methodological association of faculty completely fulfilled structure of curricula according to requirements of the Federal state educational standards of higher education, including the sequence, interrelation and amount of hours according to course units.

Scientific and pedagogical employees of faculty participates in implementation of such international grant programs as the National

scholarship program of Slovakia, 2014 (Slovakia), Eranet Plus of 2015 (Slovakia), the Tempus Green Master (2013-2014) Project "Network of university programs for training of masters in the field of energy saving and environmental control" (Italy). Such approach makes possible adoption of the best practices of foreign countries in the organization of educational, scientific and productive activity (Appendix 34).

In 2016 by a medal of the European chamber for merits in development of science and education, the diploma "Diploma di Merito" it is awarded the associate professor of electrical equipment, automatic equipment and metrology E. A. Vakhtin. He took part in implementation of such international grant programs as "The national scholarship program" of Slovakia, 2014 (Slovakia), EranetPlus of 2015-2016 (Slovakia) with six-monthly training based on "Electrical engineering, automation and informatics" department of faculty of "Technical engineering" of the Slovak Agrarian University in the city of Nitra.

Enhancement of educational process of the Stavropol state agrarian university, use of the latest educational technologies requires appropriate level of training. The staff of faculty actively improves the professional qualification on courses of additional and professional education. Within advanced training the faculty annually sends teachers of departments to higher educational institutions on various programs of advanced training of scientific and pedagogical workers according to the plan of department (Appendix 35).

For the purpose of detection of need for training and forming of the plan for training of scientific and pedagogical workers annually departments of faculty create requests for external training which there can undergo staff members of university. At the same time financing of training of staff members is made for the budget account of university. Professional development course are chosen by the interested staff members of university independently for the purpose of updating of theoretical and practical knowledge in connection with increase in requirements to skill level and need of development of modern methods of the solution of professional tasks. Staff members of university improve skills at the basic enterprises, the leading scientific and educational centers of Russia:

<b>Name of company</b>	<b>The name of the program</b>
Institute of Advanced Training for managers and specialists of the fuel and energy complex of the Ministry of Energy	"Operation of power plants in the production, electricity transmission and distribution"
	"Conducting energy audits in order to increase energy efficiency and energy saving"
	"Tests and measurements in electrical installations"
NGO "OWEN" Ltd.	"Programming PLK1hh. Basic course"
JSC "Electrical plants "Energomera "	Operation, programming and use of multi-function meter AMR production of "Electrical plants" Energomera "

**Conclusions on the standard 5:  
Strengths:**

1. Teachers develop and publish educational materials in the central publishing houses. In the majority of domestic and foreign publications authors receive positive reviews of external experts.
2. Participation of young teachers in research.
3. Periodic training CPD provides a high level of teaching. Conducting workshops provided with modern tools and technologies.

**Areas for improvement:**

1. Increase the number of publications in international journals.
2. It is necessary to improve the language skills to use foreign experience in training of new technologies.
3. Lack of foreign training for the teaching staff.

**2.6. Standard 6. Educational resources and student support system**

Currently, training and research work on enlarged group of programs of study 13.00.00 "Electricity and heat power engineering" is carried out in 2 lectures, 25 educational and 6 scientifically research laboratories. The total area of teaching and laboratory facilities of the Faculty is 2300 sq.m (Appendix 36).

On the basis of laboratory we give practical and laboratory classes; scientific and applied research, including on the orders of agricultural and municipal enterprises, the Ministry of Agriculture of Stavropol Krai. They are all fully provided with necessary equipment in due course. Lecture halls are equipped with multimedia projectors and screens.

For research activity we use the department area, specialized laboratories, as well as computer classes of the Faculty.

The introduction of new information technology in the educational process requires high demands on hardware and software. Currently, we have a sufficient number of units of IBM-compatible computers at the faculty. The faculty has a sufficient number of local area networks, there are 2 computer classes. According to a leased line through a proxy server of the University we provide access to the Internet for the computer classes.

Software and information support of the educational process is organized in view of the fact that during training the student must master the skills of using information technologies to carry out the development of course projects, settlement and graphic works, preparation of final qualifying work at a high level, learn to program, manipulate the results of experiments to carry out the collection of information for independent research, to perform graphic work, mathematical modeling of physical processes, technical devices and systems.

At the University a great attention is paid to the licensing of software used in the learning process, and in other areas of the university.

In the framework of the national project "Education" in 2008 at the Faculty we created and modernized 16 innovative specialized teaching and research laboratories, which are involved in the implementation of educational program "Power and Electrical Engineering." They include:

- Laboratory "Power"
- Laboratory "Design of power supply systems";
- Laboratory "Electrical installation";

- Laboratory "Electrical and electronic devices"
- Laboratory "Life Safety";
- Laboratory "Physics";
- Laboratory "Heat";
- Laboratory "Alternative Energy Sources";
- Laboratory "Automation";
- Laboratory "Electricity";
- Laboratory "Electrical Engineering and Electronics";
- Laboratory "Theoretical Foundations of Electrical Engineering";
- Laboratory "Electrical technology and energy saving";
- Laboratory "Electric drive and electrical equipment";
- Laboratory "Electrical Machines";
- Laboratory "Operating electrical equipment";
- Laboratory "Electrical Safety".

In 2004 in cooperation with the concern "ENERGOMERA" we established (the only in Stavropol Krai) educational and scientific laboratory "Automated commercial electric power accounting system", the material and technical base which is more than 2 mln. rub. For over 12 years, the concern updates the logistical laboratory base for more than 500 thousand rub. annually. In addition, the technical control department of the concern, absolutely free, provides technical support and maintenance of educational and laboratory equipment. On the basis of the laboratory we carry out not only training sessions, but also refresher courses for faculty members, and for members of the concern (Appendix 37).

In 2007 for students of the faculty was established the nominal grant of "the President of the concern" ENEROMERA ", which in 2016 was 15 thousand rub. per month during the academic year.

Each year, employees of the department "Automation of commercial electric power accounting system" conduct classes on discipline "Metrology", which is based on laboratory and on the basis of the concern where students learn modern methods of design, installation, programming and maintenance of microprocessor means of electric energy, and 9 students and 2 teachers of the Faculty in 2016 underwent further training courses on the program "Operation, programming and use of ASCRE manufactured by CJSC" Electro-technical factories "Energomera".

Within the framework of the cooperation agreement, for the past 10 years, the company "ENERGOMERA" is the basis of production practice for students of the Electrical engineering faculty. So in 2016, at the end of the interview 12 of the graduates stayed working in the concern "ENERGOMERA".

Scientific Library of Stavropol State Agrarian University is equipped with the necessary telecommunications equipment, communications equipment, electronic equipment, it has free access to the Internet, using Wi-Fi technology. For independent work of students there are 7 reading rooms, 750 seats (including dormitories library), of which - 165 computer workstations with access to the network "Internet" and electronic-educational environment of the university, 71 copying equipment.



The library fund has (01.01.2016) 2,415,205 copies of print and electronic publications, including 861,416 copies of educational and methodical literature on the basis of educational programs.

Each student is provided with individual unlimited access from anywhere in the network "Internet" to the resources of electronic library systems: DLS "Lan"; DLS Znanium.com; DLS "Stavropol State Agrarian University."

Electronic University Library, including access to resources, virtual services and information materials, is formed on a single portal <http://bibl.stgau.ru/> Scientific Library. The site of the library has a system of "single search box", which combines the search for its own and external resources of the Scientific Library.

Fund of additional literature includes official, reference and bibliographic and periodicals. Fund of periodicals contains more than 760 titles of printed periodicals and more than 6 thousand titles of Russian and international electronic periodicals.

Fund of periodicals contains, inter alia, the following editions of the profile: engineering library on occupational safety, sensors and systems, mechanization and electrification of agriculture, electrical engineering news, occupational health and safety in agriculture, health and social security, semiconductor lighting, lighting, power station, electricity, electrical equipment: maintenance and repair, electrical and energy saving.

Electronic and printed publications of Scientific library provide with educational literature all the disciplines taught at the university in accordance with the requirements of the FGES.

The electronic catalog contains more than 420 thousand records, forming the base of our own generation data, "scientists of Stavropol State Agrarian University," contains more than 20 thousand records, "Articles", which contains over 340 thousand records.

The users have access to modern professional databases: Digital Dissertation Library of the Russian State Library, the Central Scientific Agricultural Library, Scopus, Web of Science Core Collection, e-Grebennikon library.

Terminal of the Central Scientific Agricultural Library provides full-text access to international collections of scientific periodicals EBSCO, and ProQuest Company: ProQuest Agricultural Science, EBSCO Agricultural Science Source, EBSCO Food Science Source.

The system of links to educational and scientific electronic resources, the access to the electronic catalogs of leading libraries and universities in the world, links to international collection of open access journals (Open access): Science Direct, Springer, Taylor & Francis, Oxford University Press, Thomson Reuters, EBSCO, JSTOR, ProQuest, DOAJ (Directory of Open Access Journals) and etc.

Students with disabilities are provided with «Jaws for Windows 15.0 Pro» automated work places with installed software on their screen reader, which allows you to convert the file into voice and electronic publications (an agreement on cooperation and joint activities (from 25.06.2012g.) from the Stavropol Regional Library for the Blind and Visually Impaired named after V. Mayakovsky.

Educational work at the Faculty is conducted in accordance with the concept adopted by the university, which defines: the goals, objectives and principles; the structure of the educational process; the expected results of the implementation of the concept; regulation and assessment of educational activity (Appendix 38).

The faculty is made up of an annual educational and career guidance, the implementation of which is discussed at the meeting of the Academic Council of the Faculty.

Curators have a direct contact with student groups. They are appointed by the Dean of the Faculty on the proposal graduating chair from among the most experienced and qualified teachers. Their work is determined by the plan under consideration at a meeting of the administering sub-department and approved by its head. Information on the activities recorded in diaries curators. At the end of each school year, the curators report on the meeting of the department. The educational activity of the department is conducted in the following areas:

1. Preventive work. Students who have a large number of omissions and unsatisfactory current certification, are invited to the department meeting, where they explain what the consequences can have a similar attitude to the educational process, we practice meeting with problem academic groups. In exceptional cases, can be organized personal meetings with the Head of the administering sub-department, teachers and parents of underachieving students.

2. Educational work. It is carried out in the course of personal meetings of teachers of the department and the head of the department with groups or individually with the students in the form of conversations, suggestions for the formation of behavior, and so on. An effective method is to bring the impact of the civil elements, legal, patriotic, moral education in the disciplines of teaching process.

3. Formation of traditions. The university held such events as "Dedication to freshmen", "Student Day", "Day of the specialty", Health Week, a competition of wall newspapers.

4. Participation in cultural and sports events. Each year, the university held a review competition "Student Spring", "Christmas party", Valentine's Day, Maslenitsa festivities .

5. Participation in social events. Students actively participate in charity events and concerts organized by the city administration, and other activities.

Social support for students with the following directions:

- Health care (system of healthcare work for the prevention of diseases and medical examination of students and staff);

- Organization of housing and living conditions (The University has 5 dormitories having 3152 beds / places. Each dormitory is equipped with a sleeping area, bathroom and washroom, bathroom consumer services, leisure facilities. All rooms are electrified, equipped with central water supply, sewerage and heating, security, all rooms installed fire alarm. All dormitories are equipped with video surveillance systems);

- Catering services (catering plant consists of 6 canteens). Canteen is equipped with modern technology and a variety of refrigerating machinery; set-meals are presented in the menu;

- Sports and health work (the university operates sports complex, which includes sports facilities: for football, volleyball, basketball, fitness, gym, work sections in various fields of sport) (Appendix 39).

The university conducts monitoring of student opinion on a regular basis:

- Conducted a survey of students on the conditions and the organization of educational process (at least 1 time per quarter);

- Meeting of the students with the rector and the university administration (at least 1 time per semester);

- Meeting of the students with the Dean, Vice-Rectors.

Feedback from students is carried out through social networks.

Educational process can be corrected according to the survey.

### **Conclusions on the standard 6:**

#### **Strengths:**

1. Many faculty lecture audience are equipped with interactive boards, multimedia projectors and screens.

2. Audiences with no fixed imaging devices, can be supplemented with existing faculties portable multimedia projectors and screens.

3. All students have the opportunity to work with the electronic resources that are available via the Internet. These resources are continuously updated.

4. We carry out a survey of graduates on completion of the activities of final state certification of satisfaction with the educational process.

#### **Areas for improvement:**

1. Systematic updating of internet resources departments to provide students relevant information on the educational process.

2. The development of pre-order system of literature via the Internet. Development of the system quick digitizing of printed sources.

### **2.7. Standard 7. The collection, analysis and use of information for management education**

In view of current trends towards the internationalization of education and research activities of the University, improving the competitiveness of the educational requirements for the products in the domestic and foreign markets, as well as the need to modernize the human resource capacity of the Electric power engineering faculty of international cooperation is seen as a tool to achieve their goals and objectives.

To improve and update the educational programs the university constantly conducts sociological research among students and members of the production. The monitoring results are reported to the personnel at the weekly University administration meeting, dean's office, at meetings of the departments and the Academic Council of the University and faculties, at the meetings of educational committees, meetings with students of the

University administration and faculty, at the meetings of the educational committees, parent-teacher conferences.

Information about the educational programs of the Electric power engineering faculty is published on the university's website <http://stgau.ru/abiturient/>, as well as in specialized publications for high school students. This information is constantly updated. The main mission of this control is to form a common information space around the university, the positive image of the university, its positioning as a competitive educational institution in the world system of education with advanced scientific and innovative technologies, it is able to prepare highly qualified specialists for work in the Southern and North Caucasian Federal District, and for the global economy.

The University established its own system of undergraduate and graduate database, called AIS contingent. It monitors student more than 120 parameters: name, photo, address, information about the parents, studied languages, etc. It implements features such as a history of movements and certification of the score-rating assessment, statements and information. In addition, we developed the AIS "The calculation of hours of training and state" that allows for calculation of the curriculum, taking into account the features of the educational process for the various forms of employment, consideration of classroom and extracurricular load, control of compliance of educational groups working curriculum, the ability to forecast staffing and teaching loads for 3-5 years, as well as reports on teaching loads of chairs, faculty and the university as a whole.

The university established a center to promote employment of graduates, which aims – to promote the employment of students and employment of graduates. Areas of its work:

- providing jobs for temporary employment and employability of graduates;
- assistance in writing resumes, advice on job search;
- training workshops «Technology of effective job search”, etc .;
- organization and carrying out of presentations of enterprises, companies and organizations;
- analysis of the effectiveness of employment and demand for university graduates.

Many graduates are successful in their careers, occupy high positions in the government and commercial structures.

### **Conclusions Standard 7:**

#### **Strengths:**

1. Information on employment and demand for graduates at the University of internal resources.
2. The presence of the university unified information network, electronic informational and educational environment, their effectiveness, high level of introduction of information technologies in the management of GEPP.
3. The ability to use the information collected for solution of different problems with the work of relevant structural departments on different levels, as well as teachers and students.

### **Areas for improvement:**

1. Placing information on the website about the graduates, creating a feedback channel-graduate university.
2. The lack of a system of measures to inform about the life of the university on the domestic and foreign public resources.

### **2.8. Standard 8. Information to the public**

Informing the public about the educational program 13.00.00 enlarged group "Electricity and heat" comes through various communication channels. A significant role is played by the official website of the University, located at the address: [www.stgau.ru](http://www.stgau.ru) in accordance with the rules of placing on the Internet and update the information on the educational institution (approved by the RF Government Decree of April 18, 2012 №343.). The site contains information on the activities of the University and its structural divisions. Clearinghouse University official site is formed from the public important information for all participants in the educational process, business partners and all other interested parties in accordance with the authorized activities of the University. Horizontal navigation menus for groups of target audience is static and consists of the items: "General Information", "Structure of the University", "Science", "Student", "School leaver", "Development of agriculture", "MBA" Agribusiness ", " "Professional standards "(the first line of the menu). Horizontal menu is the second line of the paragraphs: «Web-mail», «Contact», "Search", "Map of the portal." The core modules of the main page: "Official information", "Anti-corruption", "Gallery", "Hostel SSAU", "Human resources-the formula for success", "Events", "Links", "Faculty news", "News" and "Virtual tour of the University." Each department involved in the implementation of GEPP on 13.00.00 "Electricity and heat" has its own page on the site. Each teacher has a personal account, which places the material on the subjects and the learning process. Official groups of Stavropol State Agricultural University work in social networks, where students, faculty, and university graduates are registered. Achievements of students, university teachers in general are widely reported in the news on the website of the University and the faculties of the transmission "SU Student", videos about different events in the life of the university and the students, who then posted on the University website and on YouTube, on the information plasma screens. The life and activities of the University and the Faculty are covered by the media - newspapers "Stavropol Pravda", "Komsomolskaya Pravda", "Agrarian Stavropol Krai," "AGROSTART" magazines, "Agricultural Stavropol Krai," "Daily Agricultural Review," "AGROkub Villager" and others. In 2017 the first issue of the scientific journal "Rural mechanic" is dedicated to scientific advances of the Faculty. A lot of interesting information can be found in the university newspaper, as well as booklets, brochures, leaflets. Informing the public is held at the traditional annual Open Days of faculties and the university, meetings with alumni. An effective communication channel is vocational guidance work being done by staff and students of the faculty among schoolchildren of schools of the city and regions of Stavropol Territory (proof on site). For graduates of the University there have been created conditions for job search - acquaintance with large

organizations-employers, available vacant places, sometimes places for practical training, placing a resume is possible on the webpage "Center of promoting the employment of graduates," hosted on the University website. Monitoring studies on graduate employment and demand for jobs in the labor market are being conducted. The results of the analysis of the employment of graduates are considered at meetings of the Academic Councils of faculties, department meetings. In collaboration with employers, each faculty is practicing its own specific forms of cooperation. Traditionally, outreach workshops on the basis of employers-organizations are held. For example, training on discipline "Metrology" held on the basis of educational laboratories of concern "Energomera" in the 2015-2016 academic year. And on the basis of PJSC "MRSK North Caucasus" of the substation "Central" and "Western" students were trained in the discipline "Electricity".

These classes allow each student not to get lost in a large number of graduates, and to find his employer, who will appreciate all that a student knows and can do. The employer, in turn, is able to see his potential employee among many students.

Informing the professional community is also carried out through the activities of Stavropol industry inter-regional resource center (SIIRRC) among the educational institutions of primary and secondary professional education of the agrarian profile, operating in the North Caucasus and Southern federal districts. SIIRRC operates in the structure of the University on the basis of the Institute of additional professional education (IAPE). SIIRRC organizes training courses, provides consulting and methodological support for institutions which are part of the industry resource center.

### **Conclusions on standard 8:**

#### **Strengths:**

1. System of activities for informing about the life of the University on domestic and foreign public resources.
2. Regular updating of the website of the University.
3. "News of the Faculty of electric power engineering" on the University website.
4. Information about the employment of graduates and the demand on the internal resources of the University.

#### **Areas for improvement:**

1. Widening the audience visiting the pages of the Faculty of electric power engineering on the University website by creating and placing new entries, (involving representatives of scientific and professional communities, local population), maintenance of electronic journal "ElektroNEWS" informing about the results of the activities of specialized student groups, scientific and educational achievements.

## **2.9 Standard 9. Monitoring and periodic evaluation of educational programs**

Main professional educational program (OPOP) for the enlarged group 13.00.00 "Electricity and heat" (13.03.02 Power and Electrical Engineering Profile "Power supply", 13.04.02 Power and Electrical Engineering Profiles "Power supply" and "Optimization of developing power supply systems")

governs the objectives, expected results, content, conditions and technologies of educational process, quality assessment of graduate training in this area. OPOP includes: curriculum, working programs of academic disciplines and other materials to ensure the quality of training of students as well as the practices of the program, training calendar schedule and training materials that accompany the implementation of programs (<http://www.stgau.ru/obschinf/information/oop/>).

The curriculum is reviewed annually at the end of the academic year in the context of new requirements, is the basis for the allocation of teaching load for the disciplines, departments, specific teachers. Workload and staff of the departments is reviewed and approved annually in the last in the academic year meeting of the Academic Council of the University. Discussion and approval of the curriculum is preceded by meetings of educational committees of the faculties with the participation of teachers of all departments responsible for the educational work, at which the most important issues for the year are considered and recommendations are made.

Each training cycle has a basic (mandatory) part and a variable (profile) one. Students can form individual educational path by choosing subjects from the variable part of the curriculum. The university component in the form of a variable part and optional disciplines is formed considering regional peculiarities, the realities of Stavropol Territory and the Northern Caucasus.

Testing the achievement of learning outcomes is carried out by the assessment of competencies of graduates by teachers, heads of production practice, members of the state certification committee and the employer. Adjustment mechanism of learning outcomes is based on the consideration of the opinions of students, teachers and employers through questionnaires, analysis of comments on the production practice, reports of State Final Attestation.

Practical work of students is monitored on a weekly basis at the place of practice by senior officials of departments and representatives of the employer. Leaders from the production practices give their opinion on the results of practical training of students. As a result of a production practice students draw up a report and a diary which are checked by the heads of the practice from the side of the company and the university department.

At the end of practices there is a discussion and adjustments of the training programs for core subjects, taking into account the wishes of the employer in terms of skills and abilities of students and the formation of competencies. In addition, the results of the survey of experts on the quality of training of graduates (proof on site) are taken into account. Examples of improvements introduced on the results of surveys are presented in Appendix A.

Active and interactive forms of training in conjunction with extracurricular work are widely used in the educational process.

Multilevel system of education is implemented in the system: pre-university training, undergraduate (Bachelor's degree), graduate (Master's degree), postgraduate, professional development, retraining (at the Institute of additional professional education acting in the University

structure). Programs presented to the professional public accreditation are implemented in all elements of the system (Appendix A, p.A1). The implementation of training courses for practitioners also allows changing the content of practical training in various academic disciplines.

Students enrolled in the cluster of programs 13.00.00 "Electricity and heat" (13.03.02 Power and Electrical Engineering Profile " Power supply ", 04.13.02 Power and Electrical Engineering Profiles " Power supply " and "Optimization of developing power supply systems") have an opportunity in the second year of training to enter the Institute of additional professional education (IAPE) and receive a diploma of a second higher education.

Stakeholders can get acquainted with the learning outcomes set out in the operating educational programs on disciplines on the pages of the faculties, on the page of the IAPE, on the University website and on the personal pages of teachers.

The system of interaction with employers, labor market representatives is based on the contractual relationship. Bases for practices are specialized institutions: PJSC "IDGC SC - Stavropolenergo"; PJSC "Stavropol radio factory "Signal"; PJSC "Stavropolenergosbyt"; GUPSK "Stavropolkommunelektro"; JSC "Electroavtomatika"; JSC "ENERGOMERA" and others.

For the assessment procedure of educational activity of students the following criteria are applied, approved in the Regulations on the procedure of liquidation of academic debts, Regulations on expulsion and reinstatement of students, the Regulation on the final state certification, and others.

For each studied discipline of the curriculum there has been developed a fund of assessment means for the different forms of control (current, intermediate, final), as well as interdisciplinary competence-oriented tasks.

Implementation of the basic educational program provides each student access to databases, to e-library system containing publications on subjects studied and formed on the basis of contracts with the owners of electronic library systems, placed at the Scientific Library page at: <http://bibl.stgau.ru/>.

All teaching materials presented in the local network of the University and on the personal pages of the university teachers at the University website have special sections containing recommendations for self-study. To perform independent work, there are all the necessary conditions: Scientific library with Internet access, teaching classrooms, computer support for searching educational and scientific materials.

Research work is an indispensable element of bachelor's, master's and PhD studies and aims to complete the formation of common cultural and professional competences. Students have the opportunity to study special literature and other scientific and technical information about the achievements of domestic and foreign science; participate in research, collection, processing, analysis and systematization of scientific information; make presentations at conferences.

Information on international projects is presented in Appendix A, p. A9.

## **Conclusions on standard 9:**



### **Strengths:**

1. Curricula in "Power and Electrical Engineering" do not only meet the Federal State Educational Standard of Higher Education, but also take into account the wishes of employers and students.
2. From time to time, in accordance with the plan, external assessment of main professional educational programs implemented in SSAU is carried out.

### **Areas for improvement:**

1. Updating of the content of work programs of disciplines taking into account the experience of the development of similar educational programs and didactics of leading foreign universities to provide a better understanding of the European dimension and global trends in education in the enlarged group 13.00.00 "Electricity and heat" (13.03.02 Power and Electrical Engineering profile "Power supply", 13.04.02 Power and Electrical Engineering profiles "Power supply" and "Optimization of developing power supply systems") and increasing the attractiveness of these programs for international students, undergraduates and graduate students.
2. International accreditation of the program for the enlarged group 13.00.00 "Electricity and heat" program (13.03.02 Power and Electrical Engineering Profile "Power supply", 13.04.02 Power and Electrical Engineering Profiles "Power supply" and "Optimization of developing power supply systems") in the European Accreditation organizations (agencies).

## **2.10. Standard 10. Periodic procedures of external quality assurance of educational programs**

From time to time, in accordance with the plan, there is external assessment of OPOPs implemented in SSAU. Certificates of completion of a procedure of external quality assurance of SSAU OPOPs provided by national legislation, are: Certificate of state accreditation № 1754 from 17.09.2016 (<http://www.stgau.ru/abiturient/general/svidetelstvo/>); recognition of SSAU an effective institution in terms of monitoring the effectiveness of the educational institutions, the results of the planned site inspection by the department of oversight and control of organizations providing educational activities of the Ministry of Education of Russia (2016), diplomas and letters of appreciation from employers and civil society organizations. Some of the quality awards, the most significant for the University since 2011 (Appendix 2-10):

- Certificate of quality management system compliance with the requirements of GOST R ISO 9001: 2008 (ISO 9001-2008).
- The winner of the 7th International Quality Tournament of Central and Eastern Europe in the category "Large organizations".
- Laureate of the National competition "The best training centers of the Russian Federation - 2012" in the nomination "For high quality of educational services."
- The winner of the International Prize «International Diamond Prize for Excellence in Quality» (European Society Quality Research).
- Laureate of the annual international award "Best Company of the Year".
- Laureate of the RF Government Prize in the field of quality of 2011.

- Certificate of the environmental management system compliance with ISO 14001-2007 (ISO 14001: 2004).
  - Laureate of the competition "Best University of the North Caucasus Federal District - 2013".
  - Laureate of the All-Russian contest "Russian organization of high social efficiency" in the nomination "For the development of human resources in the organizations of the non-production sphere."
  - Laureate of the All-Russian contest "Russian organization of high social efficiency" in the nomination "For the development of social partnership in non-production sphere organizations."
  - Prize Winner of EFQM «Excellence Award - 2013".
  - All-Russian Prize "National Quality Mark".
  - Award "Best Educational Programs of Innovative Russia".
  - "Gratitude of the President of the Russian Federation Vladimir Putin to the team of Stavropol State Agrarian University"
  - License of EBA experts recommending Stavropol State Agrarian University as a supplier of the best products, technologies and services for today's fast-growing cities and territories. Oxford, UK, 2015.
  - Highest rated sought-after university in Russia 2015: agricultural universities.
  - Stavropol Agrarian University is on line 85 in the top 100 best universities in Russia.
  - Prize Winner of EFQM "Excellence Award - 2016".
  - Highest rated sought-after university in Russia 2016: agricultural universities.
- All these and additional awards are published on the University website: <http://www.stgau.ru/cuko/un-awards/>

In SSAU corrective actions are based on the results of external examination procedures carried out in accordance with the model of evaluation of customer satisfaction (<http://www.stgau.ru/cuko/quality-system/>).

### **Conclusions on standard 10:**

#### **Strengths:**

1. The activity of the university in the organization of external independent procedures of evaluation of the quality of educational programs.

#### **Areas for improvement:**

1. It is necessary to pay attention to the quality of the preparation of report materials (report on self-inspection) in order to conduct an external assessment of the quality of educational programs.

### **III CONCLUSIONS**

Development of educational programs to be accredited on the enlarged group 13.00.00 "Electricity and heat" is carried out in line with the Mission and the Development Strategy of the University. Aims and objectives of the educational programs are defined, evaluated and adjusted in the course of studying the views of teachers, students, supervisors of enterprises and institutions and employers about the quality of training of graduates, alumni

opinions about readiness for the implementation of professional activity. Educational activities are aimed at the needs of the region. The University developed and implemented certified quality management system (QMS). Quality Policy is discussed with the heads of various levels with the involvement of stakeholders. Revision of the working curriculum and programs of academic disciplines is conducted annually in accordance with the objectives and results of educational programs: there is updating of work programs of training courses, teaching materials, and funds of assessment means ensuring the implementation of appropriate educational technology considering the development of science, technology, information technology, economics, culture and social policy.

When forming the curriculum, the consistency of the content of the disciplines is taken into account, a logical sequence of their study is built. Disciplines and elective courses in each cycle meaningfully complement the federal component of the cycle of discipline. The procedure for evaluation of knowledge / competence of students and graduate students at the intermediate and final certification is governed by developed and approved documents. Quality control of training bachelors and masters is carried out during the training period. Conclusions about the quality of education are made on the results of the educational and scientific activities. Research work of students is organized at the departments. An open score-rating system of evaluation of knowledge / competence formation of students is introduced. This system is used to encourage the systematic work of students, differentiate knowledge evaluation as well as to improve the objectivity and reliability of students' level of training evaluation. Programs of the enlarged group 13.00.00 "Electricity and heat" are implemented by qualified research teaching employees in the areas of knowledge covered by the educational program (research and practical activity of teachers, RISC), as well as the close relationship of the educational process with scientific research. The University created a system of rating assessment of department activities and score-rating system of evaluation of activities of research teaching employees, which creates a competitive environment and activates the channels of vertical mobility of personnel. The strengths of human resources capacity is the availability of scientific and pedagogical schools and higher qualification training system.

The teaching staff takes part in the work of various international, national and university conferences, seminars and exhibitions. Educational programs of the enlarged group 13.00.00 "Electricity and heat" are provided with adequate classroom fund, laboratories and equipment. Laboratories are equipped with modern equipment and instruments necessary to carry out laboratory and practical work. Equipment and instruments are used not only in the educational process, but also in the performance of R & D, graduation papers of bachelors, masters and PhD students of all directions. Innovative laboratories are bases for training practices. In order to optimize the learning process, multimedia classes and Internet resources are widely used, where there are tasks for students. Study subjects are provided with necessary electronic educational resources, many of which are located in the University educational servers. For independent work of students in the disciplines, carrying out scientific and research works, performance of

course and graduation papers there is time for work in computer rooms, laboratories, in the reading room of the Scientific Library. Management teams of the University and faculties regularly collect information about the participation of students and teachers in conferences, contests and competitions. Information about these achievements is posted on the University website and the pages of the faculties. Informing the public is made through the University website, social network "Vkontakte" and YouTube, the media, brochures, memos, books about the University. Teachers carry out vocational guidance meetings according to the annual plan. Informing the public is held at the traditional Open Days of faculties and the University, meetings with alumni. There are monitoring surveys on graduate employment and demand for jobs in the labor market. Information about employment and the demand for graduates is posted on the page of the Center of promoting the employment of graduates on the University website. The results of the analysis of the employment of graduates are considered at meetings of the Academic Councils of faculties, department meetings.

## **IV. APPLICATIONS**

### **Appendix A**

#### **CLUSTER ACHIEVEMENT OF THE EDUCATIONAL PROGRAMMES**

##### **13.00.00 «Electric- and heat power engineering»**

13.00.02 Electric-power industry and electric technology  
(specialization«Power supply»)

13.04.02 Electric-power industry and electric technology  
(specializations«Power supply» and «Optimization of the developing  
systems of power supply»)

#### **A1.The quality of the educational programme realization**

The quality exposure of students' training is carried out on the base of analysis and assessment of the entrance requirements, the results of the knowledge control in subjects of all blocks of curriculum, intermediate and final governmental certification of the undergraduates.

The analysis of the progress in studies of the students of the Electric-Power Industry Faculty showed that progress in studies was stable for the last five years – 89-84%, GPA – 4.0-4.2.

For the last five years, according to the final governmental certification the undergraduates of the Faculty received excellent marks (25-37%), high marks (45-56%), fair marks (17-22%), low marks were absent, and GPA was 4.17.

In the period of time 2011-2016, the staff of the Faculty trained 3076 people within the framework of the realization of the programme cluster in an extended group 13.00.00 «Electric and heat power engineering» (13..03.02 «Electric-power industry and electric technology», specialization «Power supply»,13.04.02 «Electric-power industry and electric technology», specializations «Power supply and Optimization of the developing systems of power supply» on the base of the Post-secondary training Institute.

#### **A2. Guaranteeing the urgent content of the education**

Guaranteeing the urgent content of the education takes place according to the requirements of the educational standards and interested parties' needs. So the University always holds different questionnaire polls and surveys among employers, students, school-leavers, parents. Survey results are concrete improvements.

Thus, for the last two years we qualitatively changed the University site, added the Faculty pages, other departments. One can receive a lot of useful information – about foreign study courses, grant programmers, achievements of students and staff, where to find their job and so on (to make reference to the site).

Moreover, the University not only creates the best conditions for accommodation, going for sport, artwork but also feed our students and staff. In September, 2016, there was a survey concerning the diet at the University. In December one could see the results – assortment of dishes was expanded, pricing policy was changed.

#### **A3. Personal (Faculty competence)**

The Electric-Power Industry Faculty consists of high qualified teachers possessing academic degrees and titles. The Faculty numbers 45 people including 20 doctors of science (44.5%), 24 PhDs (53.3%), 5 lecturers (11.1%). The teachers with academic degrees and titles are 100%.

At the University, there is a rating system of the assessment of the faculty achievements. Departments' rating is conducted according to the teachers' results. The extended groups of criteria for the rating assessment are the following: educative-methodological work, educative-pedagogical work, faculty qualification, obtained funds, scientific-research work, educative work, and outside regular hours work, public activity, awards and official recognition.

The Departments of the Electric Power Industry Faculty take the first, second, thirteenth and twentieth places among 52 University Departments.

#### **A4. An independent assessment of the level of students' knowledge (participation in projects FEPO, FIEB et al.)**

The high level of training of students is confirmed by the participation in the international, national, regional, inter-university competitions, conferences, competitions, where external experts evaluate their prize and high places.

Representatives of public organizations are involved in an independent evaluation of the quality of graduates.

#### **A5. Need for undergraduates (job placement)**

During last five years the need for undergraduates on 13.00.00 «Electric and heat power engineering» (13.03.02 Electric-power industry and electric technology, specialization «Power supply», 13.04.02 Electric –power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply» remains rather high, and is 83,9% on the average.

One can name some well-known undergraduates of the Faculty: Kalashnikov Sergey Ivanovich –the head of the administration, Kurskey municipal district of the Stavropol Territory; Moschenko Vladimir Dmitrievich – the head of the Kochubeevsky all mains, the Stavropol Territory; Koksheev Begali Kurmanovich – the deputy administrator PAO “MPCK of the Northern Caucasus”; Shuiakov Aleksander Vasilevich – the head of the Blagodarnenskey all mains, the Stavropol Territory; Koksheev Roman Begalievich – the head of the service substation PAO “MPCK of the Northern Caucasus”; Schurov Andrey Vasilevich – the head of the joint company “Artezianskoe”, Novocelelskey district, the Stavropol Territory; Gaeva Vera Nikolaevna – the deputy director; Platonov Gennadey Evgenevich – the head of the Appanasenkovskey all mains, the Stavropol Territory; Milohin Akexsey Vladimirovich – the main specialist of the capital construction groups, the Stavropol Territory, Capital Construction Department, PAO “MPSK of the Northern Caucasus”; Mihailov Vasiley Vasilevich –the deputy director of the Caucasian management of the Federal service on the ecological, technological and atomic control.

#### **A6. Educational resources**

Bachelors, specialists, masters are adequately provided with a material and technical base to organize instructional lines on the extended group 13.00.00 «Electric and heat power engineering» (13.03.02 Electric-power

industry and electric technology, specialization «Power supply», 13.04.02 Electric-power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply»). (<http://www.stgau.ru/obschinf/gallery/403/#gallery>).

#### **A7. Research activity**

All researchers taking part in training are engaged in research whose results are published as research papers, for example in 2016 the Faculty staff published 279 papers, 31 papers were published in the journals recommended by VAK, 14 papers are indexed in the international quoting bases of Scopus and Web of Science.

In 2012-2016, the Faculty received 146 protective documents including 62 patents for inventions and useful models, 25 monographs were published.

Both high publication activity and Faculty cooperation with leading central journals allowed increasing greatly scientific-metric indices. The faculty quoting index is 26 970, Hirsh index – 20, 3376 papers were placed in the RINZ base.

The main exchange area of the latest scientific information is participation in exhibitions, congresses and shows. In the period of 2011-2016, the Faculty staff was presented in these events: 75 developments and 43 medals were received.

#### **A8. Academic mobility of the students**

The University develops international co-operation with 71 universities in 66 countries of the world. Within this co-operation, the University and university-partners possibilities of academic mobility of the students training on the extended group 13.00.00 «Electric-heat power engineering» (13.03.02 Electric-power industry and electric technology, specialization «Power supply», 13.04.02 Electric power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply») are being studied now.

#### **A9. International projects**

The Faculty researchers take part in the realization of such grant programmers as Slovakia National grant programmer, 2014 (Slovakia), EranetPlus 2015 (Slovakia), Tempus Green Master Project (2013-2014), «The network of university programmers to train masters in the field of power supply and ecological control» (Italy). Such approach allows adopting the best practices of foreign countries for organization of educational, research and production activity.

E.A. Bahtina, associate professor of the Electric Technology, Automatics and Metrology Faculty, was awarded with the medal for merit in development of science and education by Eurochamber, DiplomaMerito diploma who took part in realization such foreign grant programmes as «National grant program» of Slovakia, 2014 (Slovakia), EranetPlus 2015-2016, with six-month training course on the base of «The Electric Technology, Automation and Informatics Faculty», «The Technological Engineering Faculty», Slovak Agricultural University in Nitra.

### **The list of the sociological survey carried out by the Sociological Survey and Marketing Department in 2011-2016**

1. «Applicant questionnaire»
2. «The choice of the University»
3. «The adaptation of the first-year students to the University»
4. «Educational work at the University»
5. «Educated and spare time activity of the students»
6. «The student initiatives»
7. «The information of training (questionnaire for students and lecturers)»
8. «Public catering at the University»
9. «The staff satisfaction by labor»
10. «Undergraduates' plans»
11. «Youth way of life»
12. «The head's questionnaire (employer survey)»
13. «The specialist's questionnaire (employer survey)»
14. «The quality of life for Stavropol population»



Certificate on public and professional accreditation of International Union of Public Academies of Sciences



## Certificate on accreditation of the Agency on Public Control of Quality of Education and Development of Career



**Diploma of the Winner of the Award of the Government of the  
Russian Federation in the field of quality, 2005**



ПРАВИТЕЛЬСТВО РОССИЙСКОЙ ФЕДЕРАЦИИ

**ДИПЛОМ**

ЛАУРЕАТА ПРЕМИИ ПРАВИТЕЛЬСТВА РОССИЙСКОЙ ФЕДЕРАЦИИ  
2005 ГОДА В ОБЛАСТИ КАЧЕСТВА

*Федеральному государственному  
образовательному учреждению  
высшего профессионального образования  
«Ставропольский государственный  
аграрный университет»  
г. Ставрополь*

ПРИСУЖДЕНА ПРЕМИЯ ПРАВИТЕЛЬСТВА  
РОССИЙСКОЙ ФЕДЕРАЦИИ В ОБЛАСТИ КАЧЕСТВА  
ЗА ДОСТИЖЕНИЕ ЗНАЧИТЕЛЬНЫХ РЕЗУЛЬТАТОВ В  
ОБЛАСТИ КАЧЕСТВА ПРОДУКЦИИ И УСЛУГ, А ТАКЖЕ  
ЗА ВНЕДРЕНИЕ ВЫСОКОЭФФЕКТИВНЫХ МЕТОДОВ  
УПРАВЛЕНИЯ КАЧЕСТВОМ.

Председатель Правительства Российской Федерации

М. Фрадков



Регистрационный номер 81

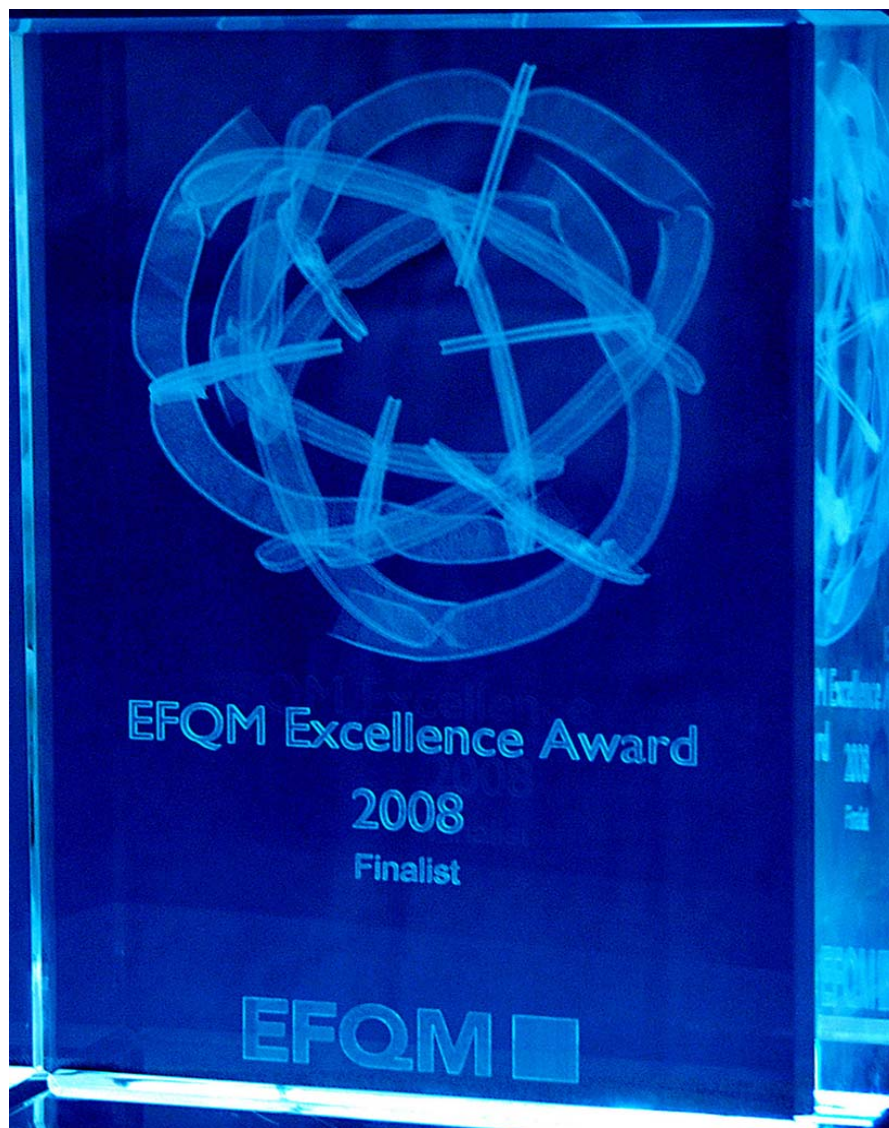
г. Москва

The diploma of the Winner of the Award of the Government of the Russian Federation in the field of quality, 2011



**APPENDIX 6**

**The Stavropol state agrarian university – the Finalist of the European tender in the field of quality "EFQM Excellence Award – 2018"**



**The Stavropol state agrarian university – the Prizewinner of the European tender in the field of quality "EFQM Excellence Award – 2010"**



**APPENDIX 8**

**The Stavropol state agrarian university – the Prizewinner of the European tender in the field of quality "EFQM Excellence Award – 2013"**



EFQM Excellence Award 2013



Federal State Budgetary Educational Establishment of the Higher Professional Education «STAVROPOL STATE AGRARIAN UNIVERSITY»

Prize Winner 2013

October 2013

issued by **EFQM**

Marc Amblard, CEO

**APPENDIX 9**

**The Stavropol state agrarian university – the Prizewinner of  
the European tender in the field of quality "EFQM Excellence Award  
– 2016"**





**APPENDIX 10**

**The Stavropol state agrarian university – the Winner of tender of  
the Ministry of Education and Science of the Russian Federation  
"Quality systems of training of graduates of educational  
institutions of professional education", 2010**



**APPENDIX 11**

**Dynamics of training by partners of faculty in 2012-2016 for the students studying on a cluster 13.00.00 "Electro-and power system"**



**Classes on the discipline " Electrical power supply" at the substation "Central" 110/10 kV substation "Zapadnaya" 110/10/6 kV branch "PJSC" IDGC of the North Caucasus " – West electrical networks"**



**Classes on discipline "Metrology" based design office of CJSC "Electrotechnical Plant "ENERGOMERA"**

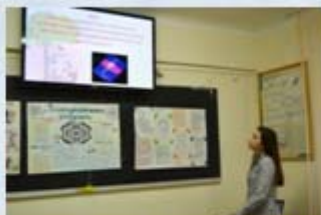


## APPENDIX 12

### Organization of open classes in a cluster 13.00.00 "Electro-and power system"

Кафедра	Количество открытых занятий				
	2012	2013	2014	2015	2016
Электротехники, автоматики и метрологии	13	14	12	15	22
Применения электроэнергии в сельском хозяйстве	5	8	12	9	14
Физики	11	14	13	17	22
Электроснабжения и эксплуатации электрооборудования	18	17	21	24	24
<b>ИТОГО</b>	<b>47</b>	<b>53</b>	<b>58</b>	<b>65</b>	<b>82</b>

### ORGANIZATION OF OPEN CLASSES



Open physics classes "Physics around us"



Open sessions on discipline "Simulation in the Electric Power Industry"



Open sessions on discipline "Metrology"



Open sessions on discipline "Electrical Equipment"

## APPENDIX 13

### Educational and tutorial maintenance of educational process in electronic and library system of the Stavropol GAU on a cluster 13.00.00 "Electro-and power system"

Кафедра	Учебных и учебно-методических пособий в 2012-2016 гг.	Электронных УМК	Количество лицензионных договоров, шт
Электротехники, автоматики и метрологии	142	14	13
Применения электроэнергии в сельском хозяйстве	82	4	10
Физики	48	1	10
Электроснабжения и эксплуатации электрооборудования	52	3	8
<b>ИТОГО</b>	<b>324</b>	<b>22</b>	<b>41</b>

### DEVELOPMENT OF ELECTRONIC EDUCATIONAL RESOURCES

The image displays a collection of digital educational resources for the 'Introduction to the specialty' (Введение в специальность) discipline. It includes:

- Course outlines (Учебно-методический комплекс) with sections for 'Block assignments' (Блок-тестовых заданий) and 'Practical assignments' (Практические задания).
- A 'Course of lectures' (Курс лекций) featuring a graphic of a lightning bolt striking a power line.
- Three certificates of accreditation (СВИДЕТЕЛЬСТВО) issued by the Stavropol State University, dated July 2014, for the 'Introduction to the specialty' discipline.

Innovative technologies of training


Use of electronic resources on discipline "Electrical Engineering" in educational process

Электротехника

Список лекций

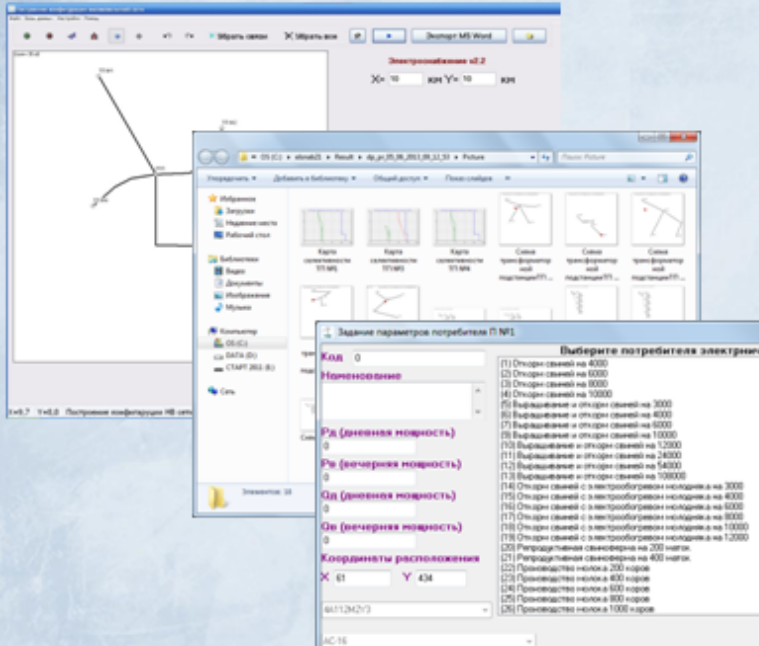
Раздел 1. ПОСТОЯННЫЙ ТОК	
	<b>Лекция №1</b> Простейшие линейная цепь постоянного тока. Основные определения и доводы. Электродвижущая сила (ЭДС) напряжения и их положительное направление. Сопротивление проводника.
	<b>Лекция №2</b> Закон Ома для участка цепи, содержащего и не содержащего ЭДС. Законы Кирхгофа. Потенциальная диаграмма. Источники тока и напряжения, преобразование их связи.
	<b>Лекция №3</b> Преобразование цепи электрических цепей последовательное, параллельное, смешанное соединения. Преобразование треугольника в эквивалентную звезду и звезда в треугольник. Методы расчета сложных цепей. Метод уравнений. Метод контурных токов.
	<b>Лекция №4</b> Метод наложения. Вводные и выходные проводимости ветвей. Теорема взаимности. Теорема комплексации. I соотношения в электрических цепях. Замена нескольких параллельных ветвей с источниками ЭДС одной эквивалентной.
	<b>Лекция №5</b> Активные и пассивные двухполюсники. Метод эквивалентного генератора. Метод двух узлов. Метод потенциалов. Передача энергии от активного двухполюсника нагрузке. Линия передачи энергии. Баланс мощностей.
	<b>Лекция №6</b> Нелинейные электрические цепи постоянного тока.
Раздел 2. СВЯЗ/СОИДАННЫЙ ТОК	
	<b>Лекция №7-10</b> Законы Кирхгофа в комплексной (символической) форме. Комплексный метод расчета электрических цепей. Топографические (потенциальные) диаграммы. Изображение равности потенциалов на комплексной плоскости.

**Developer: Associate Professor of the department "Electrical Engineering, Automation and Metrology" Vakhtina E.A.**



СВИДЕТЕЛЬСТВО О РЕГИСТРАЦИИ ЭЛЕКТРОННОГО РЕСУРСА  
№ 18292


Use of computer-aided design in the discipline "Design of Electric Power Systems"



Электротехника v2.2  
X: 10 км Y: 10 км

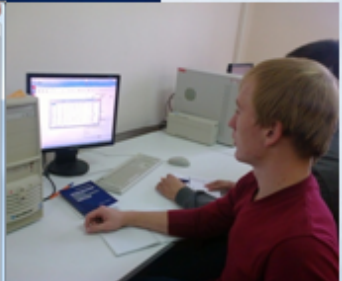
Выборите потребителей электрической энергии

Код	Наименование
1	Открыт светов на 4000
2	Открыт светов на 6000
3	Открыт светов на 8000
4	Открыт светов на 10000
5	Выходные и открыт светов на 3000
6	Выходные и открыт светов на 4000
7	Выходные и открыт светов на 5000
8	Выходные и открыт светов на 10000
9	Выходные и открыт светов на 12000
10	Выходные и открыт светов на 24000
11	Выходные и открыт светов на 54000
12	Выходные и открыт светов на 100000
13	Выходные и открыт светов на 100000
14	Открыт светов с электрооборудованием номинала на 3000
15	Открыт светов с электрооборудованием номинала на 4000
16	Открыт светов с электрооборудованием номинала на 5000
17	Открыт светов с электрооборудованием номинала на 10000
18	Открыт светов с электрооборудованием номинала на 100000
19	Открыт светов с электрооборудованием номинала на 12000
20	Ретроградная сфера на 200 метров
21	Ретроградная сфера на 400 метров
22	Проводимость нитка 200 метров
23	Проводимость нитка 400 метров
24	Проводимость нитка 600 метров
25	Проводимость нитка 800 метров
26	Проводимость нитка 1000 метров



С. И. Антонов, Л. И. Ковалев  
Л. И. Ковалев, А. И. Назарова

**ПРОЕКТИРОВАНИЕ ЭЛЕКТРО-ЭНЕРГЕТИЧЕСКИХ СИСТЕМ**



## HOME PAGE OF THE PROJECT "PROFESSOR ON-LINE" Winner, Associate Professor Zhavoronkova M.S.

ПРЕПОДАВАТЕЛЬ ОН-ЛАЙН

Мария Сергеевна  
Жаворонкова

email


[Регистрация](#) [Восстановление пароля](#)

[Главная](#) / [Страницы](#) / [Изучаем лекционный курс](#)

### НАВИГАТОР

- » ЗДРАВСТВУЙТЕ
- » ДАВАЙТЕ ЗНАКОМИТЬСЯ
- » СТУДЕНТУ
  - » ИЗУЧАЕМ ЛЕКЦИОННЫЙ КУРС
  - » ПРОВЕРЯЕМ СЕБЯ
  - » ВЫПОЛНЯЕМ ДОМАШНЕЕ ЗАДАНИЕ
  - » ЗАКРЕПЛЯЕМ НА ПРАКТИКЕ
  - » УЗНАЙ БОЛЬШЕ
  - » ВЫПОЛНЯЕМ КУРСОВУЮ РАБОТУ
  - » УЗНАЙ СВОЙ РЕЙТИНГ
  - » ГОТОВИМСЯ К ОЛИМПИАДЕ
  - » ГОТОВИМСЯ К ЭКЗАМЕНУ
  - » ЗАЙМИСЬ НАУКОЙ

### ИЗУЧАЕМ ЛЕКЦИОННЫЙ КУРС



Дисциплина «Метрология, стандартизация и сертификация» является базой при подготовке инженеров электротехнического профиля и должна формировать у вас современное электрофизическое мировоззрение и обеспечить основу для последующего изучения специальных электротехнических дисциплин.

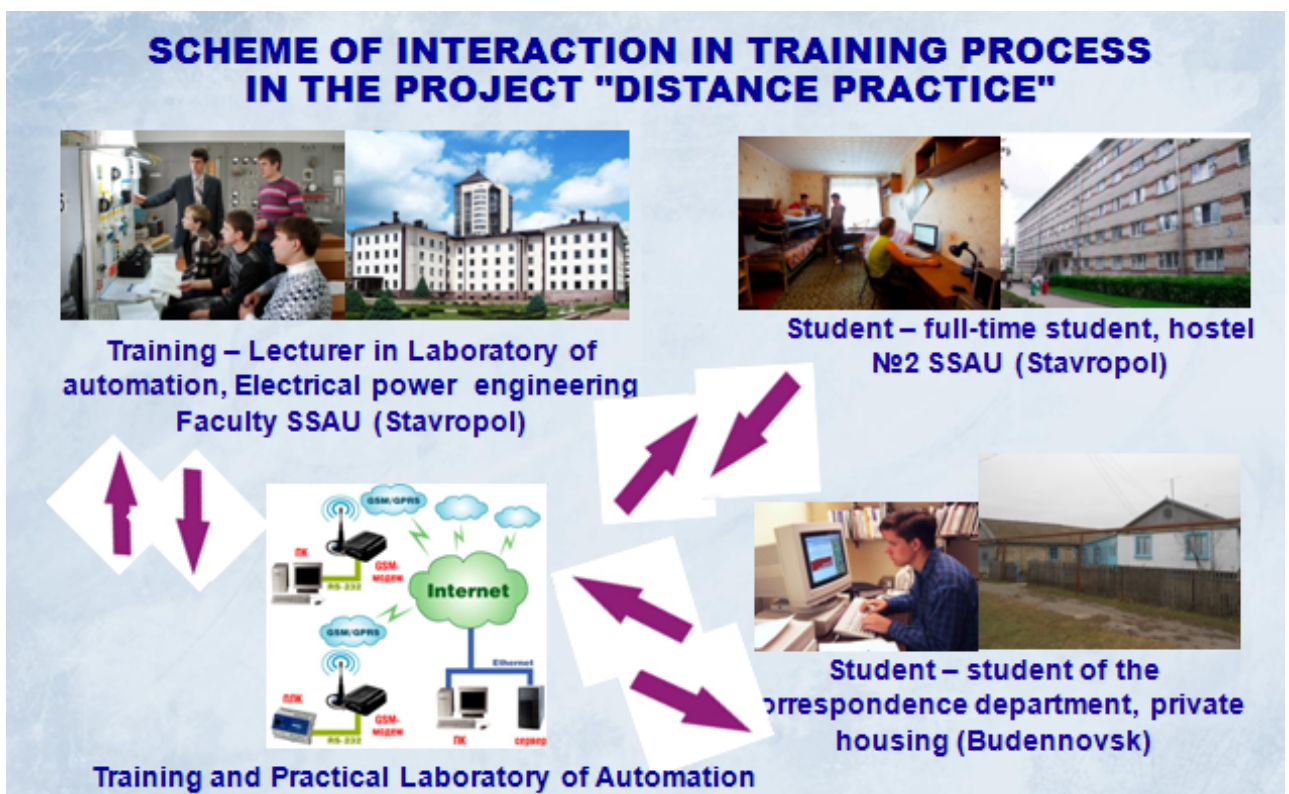
Цель дисциплины: формирование теоретических знаний и практических навыков в области метрологии, стандартизации и сертификации в свете действующего законодательства РФ, а также в рамках регионального и международного сотрудничества.

[ГЛОССАРИЙ](#) по дисциплине смотри [здесь](#).

### ЧТО БУДЕМ ИЗУЧАТЬ?

Associate Professor  
M.S. Zhavoronkova -  
twice winner of the  
"Grants for young  
professors of state  
universities of Russia"  
Vladimir Potanin Charity  
Fund

Remote Practice project of laboratory "Automation" of electrical power faculty







**APPENDIX 16**

**Bases of practice of the students studying on a cluster 13.00.00  
"Electro-and power system"**

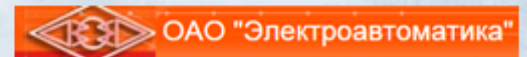
Направление подготовки	курс	Название практики	Кол-во недель	Кол-во баз практик
<b>БАКАЛАВРИАТ</b>				
<b>13.03.02 «Электроэнергетика и электротехника» академический</b>	<b>1</b>	<b>Учебная практика</b>	<b>2</b>	<b>19</b>
	<b>2</b>	<b>Ремонтно-технологическая</b>	<b>2,7</b>	<b>17</b>
	<b>3</b>	<b>Эксплуатационная</b>	<b>3,3</b>	<b>17</b>
	<b>4</b>	<b>Преддипломная</b>	<b>2</b>	<b>23</b>
<b>13.03.02 «Электроэнергетика и электротехника» прикладной</b>	<b>1</b>	<b>Учебная практика</b>	<b>4,7</b>	<b>19</b>
	<b>2</b>	<b>Ремонтно-технологическая</b>	<b>6,7</b>	<b>17</b>
	<b>3</b>	<b>Эксплуатационная</b>	<b>3,3</b>	<b>17</b>
	<b>4</b>	<b>Преддипломная</b>	<b>2</b>	<b>23</b>
<b>МАГИСТРАТУРА</b>				
<b>13.04.02 «Электроэнергетика и электротехника»</b>	<b>1</b>	<b>Учебная</b>	<b>2</b>	<b>19</b>
	<b>1 и 2</b>	<b>Эксплуатационная</b>	<b>12</b>	<b>17</b>
	<b>2</b>	<b>Научно-исследовательская</b>	<b>16</b>	<b>17</b>
	<b>2</b>	<b>Преддипломная</b>	<b>17</b>	<b>23</b>

## STATIONS OF MANUFACTURING PRACTICE – repair and technological, operational (out of university)



### Practice stations (Partner Companies)

**PJSC "IDGC SC - Stavropolenergo"**  
**PJSC "Stavropol radio factory" Signal "**  
**PJSC "Stavropolenergosbyt"**  
**GUPSK "Stavropolkommunelektro"**  
**JSC "Electroautomatics"**  
**JSC "ENERGOMERA"**  
**JSC "Teploset"**  
**Farms of AIC North Caucasus Federal District**



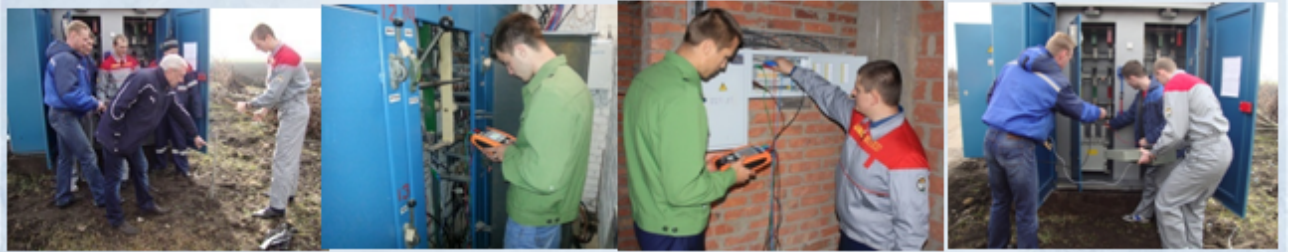
## ELECTRO-TECHNICAL LABORATORY

### Station for manufacturing practice – operating (stationary)



Test Engineer, Third group of access

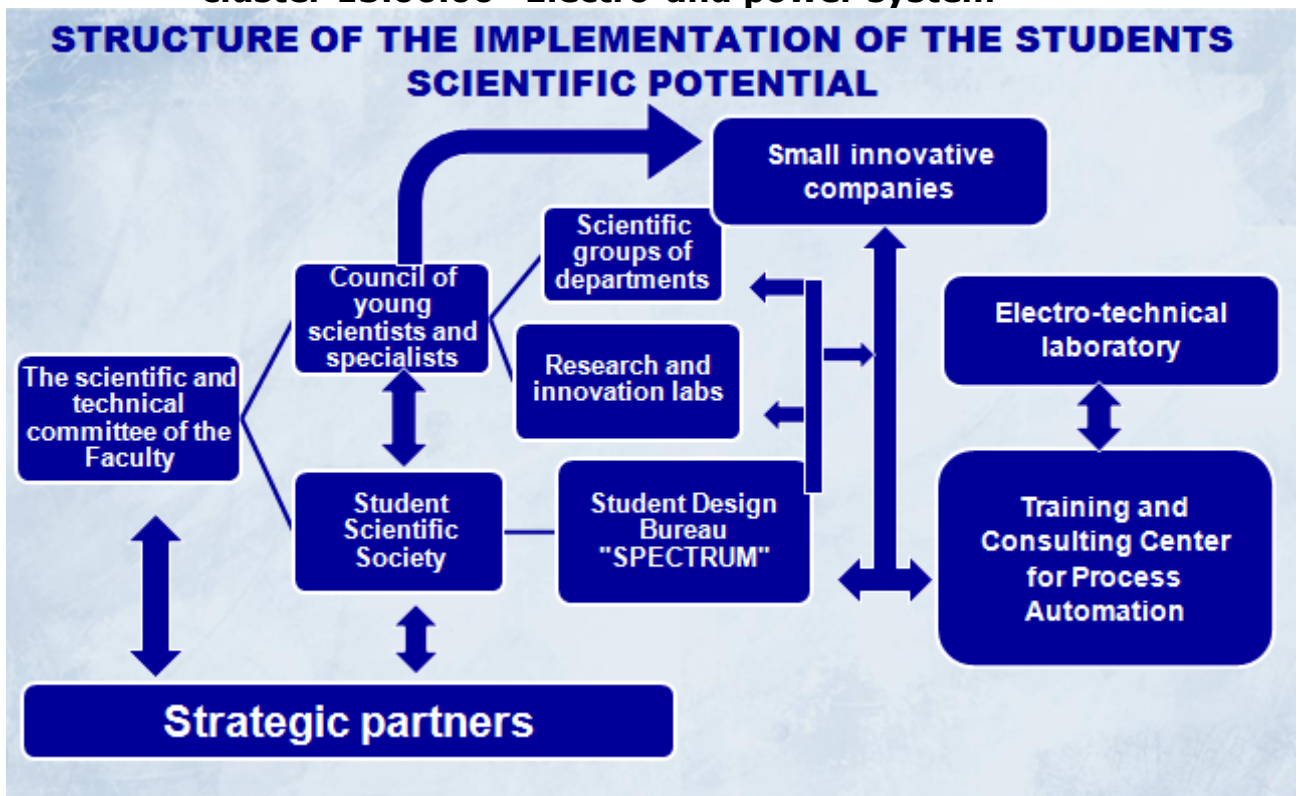
Certificate of Accreditation for Electro-technical Laboratory



**APPENDIX 17**  
**Tutorial maintenance of students' individual work, skills training,**  
**the state final examination on a cluster 13.00.00 "Electro-and**  
**power system"**



Structure of implementation of scientific potential of students on a cluster 13.00.00 "Electro-and power system"



Participation of students in federal grant programs

**STUDENT PARTICIPATION IN THE FEDERAL PROGRAM "UMNIK" IN 2012-2016**

Departments	<b>"UMNIK"</b>									
	<b>2012</b>		<b>2013</b>		<b>2014</b>		<b>2015</b>		<b>2016</b>	
	applicati ons	prizes	applicati ons	prizes	applicati ons	prizes	applicatio ns	prizes	applicatio ns	prizes
EAM	6	2	8	2	9	2	12	2	6	-
PEEA	2	1	1	1	4	1	2	1	6	-
Physics	3	1	4	-	4	0	1	-	3	-
EEEE	2	1	-	-	2	0	2	-	5	1
<b>Total:</b>	<b>13</b>	<b>5</b>	<b>13</b>	<b>3</b>	<b>19</b>	<b>3</b>	<b>17</b>	<b>3</b>	<b>20</b>	<b>1</b>



**Participation in the federal program "UMNIK-2015-2016"**

**WINNERS "UMNIK Russia ":**

Shunina Anna - 4th year student;  
Sergey Pisarenko - 2nd year student;  
Perkov Eugeny - 5th year student;  
Bairamalyev Sultan - Master 2nd year

**WINNERS "UMNIK SK ":**

Fedoseeva Tatiana - a postgraduate student;  
Saveleva Elena - 4th year student.



Participation of students in the All-Russian and international exhibitions

**Participation of students in international and national exhibition in 2015-2016**

**16 medals**

- International specialized exhibition "High Technologies. Innovation. Investments" (Hi-Tech), St. Petersburg, 2015-2016 .;
- XXIV International Agricultural Exhibition "Agrorus 2015-2016";
- Russian Agricultural Exhibition "Golden Autumn 2015-2016";
- Biotechnology Exhibition -fair "RosBio Tech"



**Achievements of students in the All-Russian tender of achievements of talented youth "National property of Russia"**

**Falko Kirill - Master of 1st year**  
**The winner of the All-Russian contest of talented youth achievements "NATIONAL PROPERTY OF RUSSIA" in "Scientific and Technical Creativity"**



The image is a composite of three parts. On the left is a gold medal with a cross and a small portrait. In the center is a large green diploma from the Russian Federation. The diploma text includes: "РОССИЙСКАЯ ФЕДЕРАЦИЯ", "АМТЛАОМ", "I-й степени Восьмой Всероссийский конкурс достижений талантливой молодежи 'Национальное Достояние России'", "НАГРАЖДАЕТСЯ", "Фалко Кирилл Александрович", "Старинский, Ставропольский край", "ФГБОУ ВПО 'Ставропольский государственный аграрный университет'", "27 марта 2014 года", "Президент А.С. Обручов", "Серия ИДР VIII", "2014", and "010637". On the right is a photograph of a young man in a dark suit and tie, holding a certificate and a book, standing on a red carpet.



Results of work of student's design office "Spectrum"

**Student Design Bureau "SPECTRUM"**



We implemented 12 contracts under the program "UMNIK";  
We received 37 medals at national and international exhibitions; published 127 scientific articles



**Professional orientation work on set of students for the direction of preparation 13.03.02 Power industry and electrical equipment**

**COMPUTER REPAIR, INTERNET SETTINGS AND CREATING A LOCAL NETWORK IN PETROVSKY DISTRICT SCHOOLS UNDER CAREER GUIDANCE**



**GAMES OF SKILL, CONTESTS AND COMPETITIONS WITH STUDENTS GRADES 10-11**



"Erudite-2016"

Business games in the lyceum  
№12, Stavropol

"ERA EEF" - a game

Tender of technical achievements of youth




Section of scientific and technical creativity of youth "Tech Hobby"

**SECTION OF SCIENTIFIC AND TECHNICAL CREATIVITY  
"TEHNOHOBBY"**



As part of the section we opened a profile class of small Academy of Sciences : "Robotics" and "Entertaining ELECTRONICS".

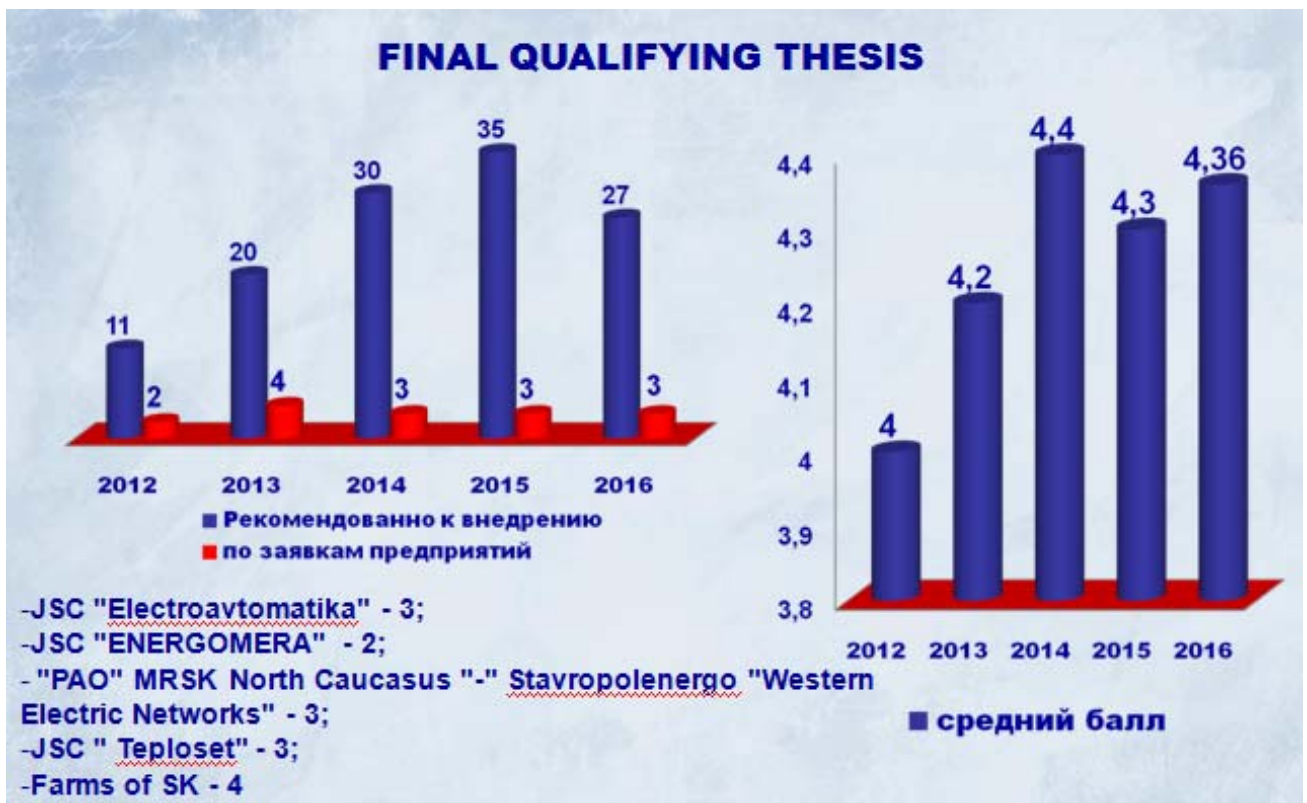
**Interactive lessons "Robotics" in the Turkmen area  
(Letnya Stavks, Ovoshhy, Kambulat, Vladimirovka)**



The collage includes several photographs of students in classrooms, some holding certificates, and images of various robotic vehicles and components such as a small car, a robot with a camera, and a motorized wheel.

## APPENDIX 26

### Results of protection of final qualification works of students on the direction of preparation 13.03.02 Power industry and electrical equipment



**APPENDIX 27**
**Qualitative composition of electrical power faculty**

Кафедра	Общее кол-во ППС	Численность сотрудников			% ППС с учеными степенями и званиями	Средний возраст	Кол-во аспирантов
		С ученой степенью или званием	Доктора наук, профессора	Кандидаты, доценты			
<b>Электроснабжение и эксплуатация электрооборудования</b>	13	13	1	11	100	53,5	-
<b>Применение электрической энергии в с.х.</b>	9	9	1	6	100	47,9	4
<b>Электротехники, автоматики и метрологии</b>	12	10	0	9	83,3	45	2
<b>Физика</b>	11	10	2	7	90,9	54,9	2
<b>Итого</b>	<b>45</b>	<b>42</b>	<b>5</b>	<b>33</b>	<b>93,3</b>	<b>50,3</b>	<b>8</b>

**Release of educational and methodical literature for the students  
studying on a cluster 13.00.00 "Electro-and power system"**

Кафедра	Количество изданных, шт				
	2012	2013	2014	2015	2016
Электротехники, автоматики и метрологии	<b>7</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>6</b>
Применения электроэнергии в сельском хозяйстве	<b>5</b>	<b>8</b>	<b>12</b>	<b>9</b>	<b>7</b>
Физики	<b>13</b>	<b>14</b>	<b>12</b>	<b>15</b>	<b>22</b>
Электроснабжения и эксплуатации электрооборудования	<b>8</b>	<b>8</b>	<b>11</b>	<b>29</b>	<b>14</b>
<b>ИТОГО</b>	<b>33</b>	<b>39</b>	<b>43</b>	<b>61</b>	<b>49</b>



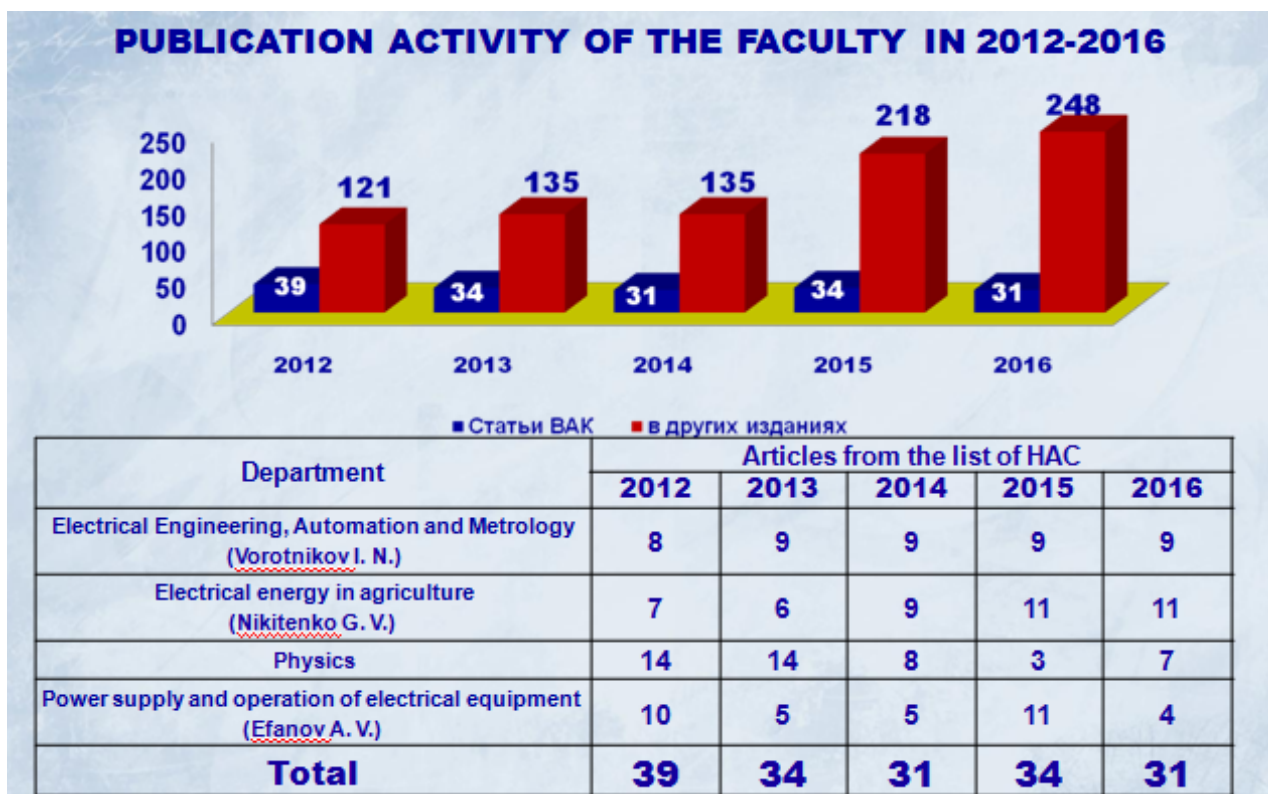
Кафедра	Количество изданных пособий, шт		
	2016	В т.ч. с грифом	В т.ч. в центральных издательствах
Электротехники, автоматики и метрологии	6	1	1
Применения электроэнергии в сельском хозяйстве	7	-	1
Физики	22	-	-
Электроснабжения и эксплуатации электрооборудования	14	5	9
<b>ИТОГО</b>	<b>49</b>	<b>6</b>	<b>11</b>

**In 2016 we published 11 textbooks in the central publishing houses "FORUM", "Lan' "**

**In 2016 we received: 5 classification stamps of Ministry of Agriculture and 1 classification stamp of the Russian Ministry of Energy**



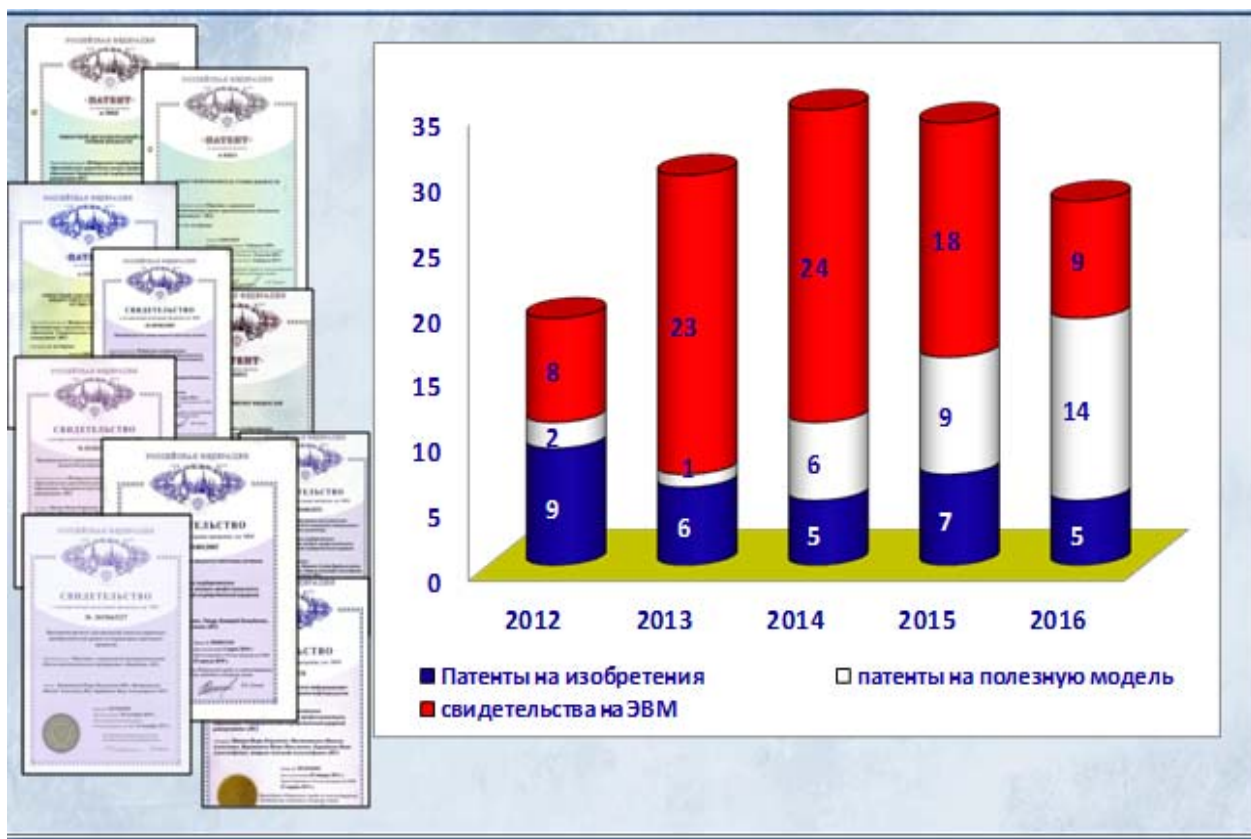
### Printing activity of the faculty of electrical power faculty in 2012-2016



**Articles of the faculty of electrical power faculty in the international databases**

<b>ARTICLE OF FACULTY MEMBERS IN INTERNATIONAL DATABASES</b>						
Department	Scopus, attached to the university				Total	Web of Science in 2015-2016
	2013	2014	2015	2016		
Electrical energy in agriculture	-	-	3	3	6	1
Power supply and operation of electrical equipment	-	-	2	3	5	1
Physics	-	1	1	3	5	-
Electrical Engineering, Automation and Metrology	1	1	2	3	7	2
<b>Total:</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>12</b>	<b>23</b>	<b>4</b>

Obtaining by the faculty security documents for inventions



Dynamics of issuing of monographs of the faculty (scientific work)

<b>MONOGRAPHS IN 2012-2016</b>					
Department	Monographs				
	2012	2013	2014	2015	2016
Electrical Engineering, Automation and Metrology	1	3	2	1	1
Electrical energy in agriculture	1	2	2	2	1
Physics	1	2	-	2	1
Power supply and operation of electrical equipment	-	1	1	1	-
<b>Total</b>	<b>3</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>3</b>









**In 2012-2016 we published 25 monographs**

**A quoting of scientific and pedagogical workers in the Russian index of scientific citing**

№	Department	Authors in RISC	The h-index	
			January 2016	January 2017
1	Electrical energy in agriculture	10	13,1	23,8
2	Physics	11	10,7	21,9
3	Power supply and operation of electrical equipment	10	10,4	18,9
4	Electrical Engineering, Automation and Metrology	10	9,6	18,8
<b>EPEF</b>		<b>41</b>	<b>10,9</b>	<b>20,9</b>

Department	Self citation %			
	January 2015	December 2016	January 2017	Plan 2017
Power supply and operation of electrical equipment	64,4	72,7	56,1	36,1
Electrical energy in agriculture	42,3	51,0	44,8	24,8
Electrical Engineering, Automation and Metrology	37,8	42,7	23,5	13,5
Physics	41,2	49,1	22,8	12,8
<b>EPEF</b>	<b>46,4</b>	<b>63,0</b>	<b>42,3</b>	<b>20,0</b>

**International training of the faculty**





## CERTIFICATE

This is to certify that

**MS ELENA VAKHTINA**, born 16.06.1961

from *Stavropol State Agrarian University, Russian federation*

has realised a post-doc mobility

within the Erasmus Mundus project **Eranet Plus: Euro-Russian Academic network PLUS nr. 2012-2734/001-001-EMA2**

at the *Slovak University of Agriculture in Nitra*,

*Faculty of Engineering, Slovakia*

in **2015/16 Academic Year**,

from **2.11.2015** till **30.6.2016**

Nitra, 30.6.2016

**dr. h. c. Prof. Ing. Peter Bielik, PhD.**

Rector, Eranet Plus local coordinator

SLOVENSKÁ POĽNOHOSPODÁRSKA  
UNIVERZITA V NITRE  
REKTORÁT  
Trieda Andreja Hlinku 2, 949 76 NITRA

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**Mission Diplomatique**  
*Diplomatic Mission*

**Union Européenne**



Type  
**CD**

Code  
**UE**

N°  
**000671**

Nom / Surname  
**VAKHTINA**

Prénom / Name  
**ELENA A.**

Date de délivrance: 01/11/2016

Date d'expiration: 31/10/2021

Signature du titulaire / Signature of bearer



**Advanced training of research and teaching employees of the faculty**

**ADVANCED TRAINING OF RESEARCH AND TEACHING EMPLOYEES OF THE FACULTY**

Department	2014		2015		2016		Plan 2017
	Profiled	General education / Pedagogical	Profiled	General education / Pedagogical	Profiled	General education / Pedagogical	
Electrical Engineering, Automation and Metrology	3	3	1	7	6	2	2
Application of electrical energy in agriculture	1	2	2	2	8	1	1
Physics	3	6	9	2	1	5	2
Power supply and operation of electrical equipment	7	1	2	8	2	5	1
<b>TOTAL</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>19</b>	<b>17</b>	<b>16</b>	<b>6</b>

**CERTIFICATES OF ADVANCED TRAINING OF RESEARCH AND TEACHING EMPLOYEES OF THE FACULTY**



**Material and technical resources of electrical power faculty****MATERIAL AND TECHNICAL BASE**

Department	Lecture rooms		Study rooms		Educational and research laboratories	
	Number, pcs	Area, sq.m.	Number, pcs	Area, sq.m.	Number, pcs	Area, sq.m.
Electrical Engineering, Automation and Metrology	1	96	7	255.4	2	42.7
Physics	1	108	5	173.3	1	17.8
Application of electrical energy in agriculture	-	-	6	357.7	2	78.7
Power supply and operation of electrical equipment	-	-	7	418.6	1	17.7
<b>Total:</b>	<b>2</b>	<b>204</b>	<b>25</b>	<b>1205</b>	<b>6</b>	<b>156.9</b>
<b>AREA of training and laboratory facilities: 1565.9 sq.m.</b>						

**LABORATORY "AUTOMATION"**

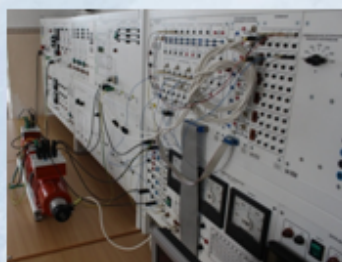
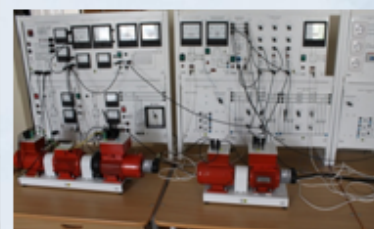
There was opened Regional Training and Consulting Centre in the field of automated process control systems on the basis of the laboratory "Automation"

**FINANCING:**

**SSAU - 398 thousand rubles;**  
**LLC NGO "OVEN" - 150 thousand rubles.**

## TRAINING AND RESEARCH LABORATORIES "POWER INDUSTRY", "POWER SUPPLY"

training direction "Power and Electrical Engineering"



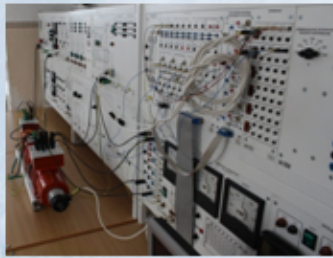
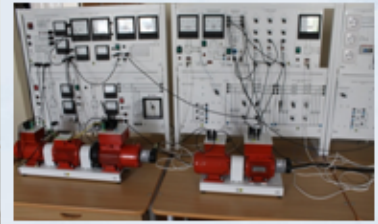
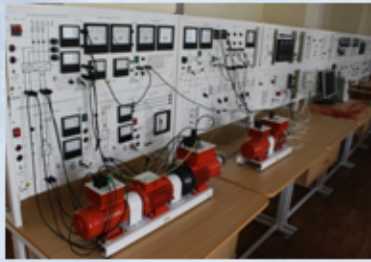
## LABORATORY "ELECTRICAL EQUIPMENT INSTALLATION»



In 2014-2015 academic year, the laboratory of electrical equipment installation was re-equipped with modern stands of the electrical firm "Interelektrokomplekt", totaling 170 thousand rubles.

## **TRAINING AND RESEARCH LABORATORIES "POWER INDUSTRY", "POWER SUPPLY"**

training direction "Power and Electrical Engineering"



## **LABORATORY "ELECTRIC DRIVE AND ELECTRICAL EQUIPMENT"**



## **LABORATORY "ELECTROTECHNOLOGY AND ENERGY SAVING"**



## LABORATORY "THEORY OF ELECTRICAL ENGINEERING"



## LABORATORY "ELECTRICAL MEASUREMENTS"



## CREATION OF POLYGON "ALTERNATIVE ENERGY SOURCES"



Photovoltaic solar energy  
converter



**Laboratory of "Automation systems of the commercial accounting of the electric power"**

**RECONSTRUCTION OF THE LABORATORY IN 2015-2016  
ACADEMIC YEAR "Automated systems of commercial accounting of electric power" AMR**



**Equipment worth 500 thousand rub. was installed.**



**BASE FOR MANUFACTURING PRACTICE CJSC  
"ELECTROTECHNICAL PLANTS "ENERGOMERA"**



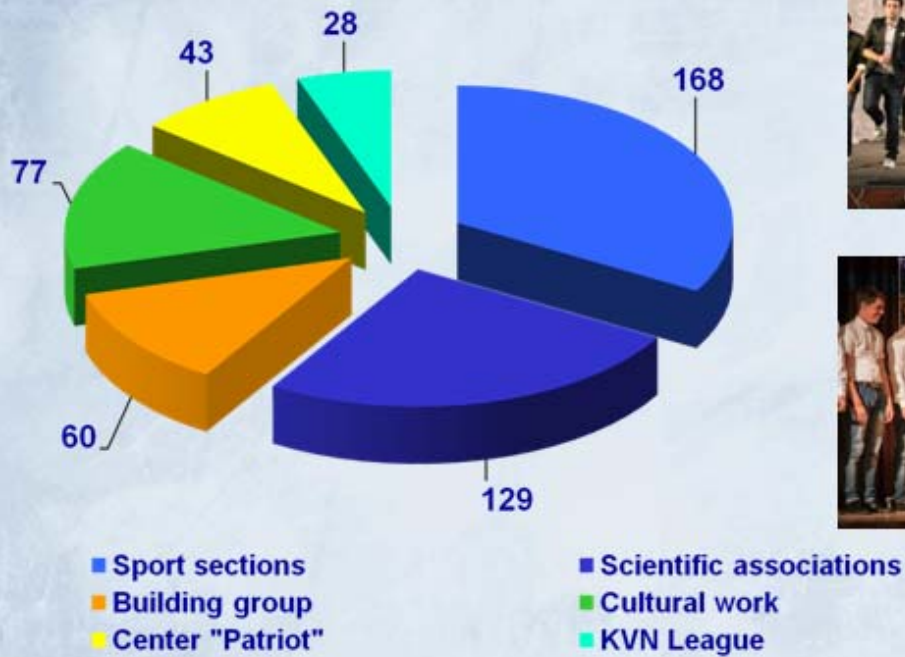
**SAVELYEVA ELENA**  
Nominal scholarship  
winner of the "President  
of Energomera"

**Professional development  
courses of RTE**

**In 2016, 9 students took additional courses on the program: "Operation, programming of multi-function meters and use of AMR manufactured by CJSC "Electrotechnical plants "Energomera".**

**Educational operation with students**

**INVOLVEMENT OF STUDENTS IN EXTRACURRICULAR ACTIVITY**



**CREATIVE GROUPS OF THE FACULTY**



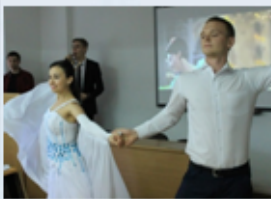
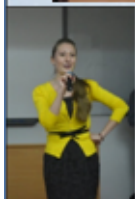


**Folk Dance Ensemble "Zadorinka"**



**Folk Dance Ensemble "SLAVNITSA"**

## **CREATIVE EVENINGS WITH TEACHERS-VETERANS OF THE FACULTY**





## DIALOGUE OF CULTURES



## STUDENTS' LIFE IN HOSTEL



Organization of annual competitions among faculty students living in the hostel



**Achievements of students in sporting activities**

**Every year, the faculty organizes more than 200 activities aimed at healthy lifestyle and therefore the faculty for the past 5 years wins prizes in the competition of Stavropol State Agrarian University "The Healthiest Faculty"**



**WINNERS OF THE CHAMPIONSHIP OF SFD IN POWERLIFTING AND INDIVIDUAL EXERCISES, 19-20 NOVEMBER 2016**



**They executed the specification of the candidate for master of sports:**

- Kolesnikov Kirill – 2<sup>nd</sup> year student;
- Zatonskaya Elena – 4<sup>th</sup> year student.



Ставропольский государственный аграрный университет  
 Ставропольский государственный аграрный университет  
 Ставропольский государственный аграрный университет  
 Ставропольский государственный аграрный университет

Электротехнический факультет  
 Электротехнический факультет  
 Электротехнический факультет  
 Электротехнический факультет

EFQM  
 EFQM  
 EFQM  
 EFQM

Здоровый образ жизни Том I  
 Здоровый образ жизни Том II  
 Здоровый образ жизни Том III  
 Здоровый образ жизни Том IV

**85% OF STUDENTS OF THE FACULTY TAKE PART IN THE PROGRAM "HEALTHY LIFESTYLE"**

**CLINICAL EXAMINATION AND VACCINATION OF STUDENTS AND STAFF OF THE FACULTY**

## PARTICIPATION IN THE ANNUAL DONOR DAY



## **IV. APPLICATIONS**

### **Appendix A**

#### **CLUSTER ACHIEVEMENT OF THE EDUCATIONAL PROGRAMMES**

##### **13.00.00 «Electric- and heat power engineering»**

13.00.02 Electric-power industry and electric technology  
(specialization«Power supply»)

13.04.02 Electric-power industry and electric technology  
(specializations«Power supply» and «Optimization of the developing  
systems of power supply»)

#### **A1.The quality of the educational programme realization**

The quality exposure of students' training is carried out on the base of analysis and assessment of the entrance requirements, the results of the knowledge control in subjects of all blocks of curriculum, intermediate and final governmental certification of the undergraduates.

The analysis of the progress in studies of the students of the Electric-Power Industry Faculty showed that progress in studies was stable for the last five years – 89-84%, GPA – 4.0-4.2.

For the last five years, according to the final governmental certification the undergraduates of the Faculty received excellent marks (25-37%), high marks (45-56%), fair marks (17-22%), low marks were absent, and GPA was 4.17.

In the period of time 2011-2016, the staff of the Faculty trained 3076 people within the framework of the realization of the programme cluster in an extended group 13.00.00 «Electric and heat power engineering» (13..03.02 «Electric-power industry and electric technology», specialization «Power supply»,13.04.02 «Electric-power industry and electric technology», specializations «Power supply and Optimization of the developing systems of power supply» on the base of the Post-secondary training Institute.

#### **A2. Guaranteeing the urgent content of the education**

Guaranteeing the urgent content of the education takes place according to the requirements of the educational standards and interested parties' needs. So the University always holds different questionnaire polls and surveys among employers, students, school-leavers, parents. Survey results are concrete improvements.

Thus, for the last two years we qualitatively changed the University site, added the Faculty pages, other departments. One can receive a lot of useful information – about foreign study courses, grant programmes, achievements of students and staff, where to find their job and so on (to make reference to the site).

Moreover, the University not only creates the best conditions for accommodation, going for sport, artwork but also feed our students and staff. In September, 2016, there was a survey concerning the diet at the University. In December one could see the results – assortment of dishes was expanded, pricing policy was changed.

#### **A3. Personal (Faculty competence)**

The Electric-Power Industry Faculty consists of high qualified teachers possessing academic degrees and titles. The Faculty numbers 45 people including 20 doctors of science (44.5%), 24 PhDs (53.3%), 5 lecturers (11.1%). The teachers with academic degrees and titles are 100%.

At the University, there is a rating system of the assessment of the faculty achievements. Departments' rating is conducted according to the teachers' results. The extended groups of criteria for the rating assessment are the following: educative-methodological work, educative-pedagogical work, faculty qualification, obtained funds, scientific-research work, educative work, and outside regular hours work, public activity, awards and official recognition.

The Departments of the Electric Power Industry Faculty take the first, second, thirteenth and twentieth places among 52 University Departments.

#### **A4. An independent assessment of the level of students' knowledge (participation in projects FEPO, FIEB et al.)**

The high level of training of students is confirmed by the participation in the international, national, regional, inter-university competitions, conferences, competitions, where external experts evaluate their prize and high places.

Representatives of public organizations are involved in an independent evaluation of the quality of graduates.

#### **A5. Need for undergraduates (job placement)**

During last five years the need for undergraduates on 13.00.00 «Electric and heat power engineering» (13.03.02 Electric-power industry and electric technology, specialization «Power supply», 13.04.02 Electric –power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply» remains rather high, and is 83,9% on the average.

One can name some well-known undergraduates of the Faculty: Kalashnikov Sergey Ivanovich –the head of the administration, Kurskey municipal district of the Stavropol Territory; Moschenko Vladimir Dmitrievich – the head of the Kochubeevsky all mains, the Stavropol Territory; Koksheev Begali Kurmanovich – the deputy administrator PAO “MPCK of the Northern Caucasus”; Shuiakov Aleksander Vasilevich – the head of the Blagodarnenskey all mains, the Stavropol Territory; Koksheev Roman Begalievich – the head of the service substation PAO “MPCK of the Northern Caucasus”; Schurov Andrey Vasilevich – the head of the joint company “Artezianskoe”, Novocelelskey district, the Stavropol Territory; Gaeva Vera Nikolaevna – the deputy director; Platonov Gennadey Evgenevich – the head of the Appanasenkovskey all mains, the Stavropol Territory; Milohin Akexsey Vladimirovich – the main specialist of the capital construction groups, the Stavropol Territory, Capital Construction Department, PAO “MPSK of the Northern Caucasus”; Mihailov Vasiley Vasilevich –the deputy director of the Caucasian management of the Federal service on the ecological, technological and atomic control.

#### **A6. Educational resources**

Bachelors, specialists, masters are adequately provided with a material and technical base to organize instructional lines on the extended group 13.00.00 «Electric and heat power engineering» (13.03.02 Electric-power

industry and electric technology, specialization «Power supply», 13.04.02 Electric-power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply»). (<http://www.stgau.ru/obschinf/gallery/403/#gallery>).

#### **A7. Research activity**

All researchers taking part in training are engaged in research whose results are published as research papers, for example in 2016 the Faculty staff published 279 papers, 31 papers were published in the journals recommended by VAK, 14 papers are indexed in the international quoting bases of Scopus and Web of Science.

In 2012-2016, the Faculty received 146 protective documents including 62 patents for inventions and useful models, 25 monographs were published.

Both high publication activity and Faculty cooperation with leading central journals allowed increasing greatly scientific-metric indices. The faculty quoting index is 26 970, Hirsh index – 20, 3376 papers were placed in the RINZ base.

The main exchange area of the latest scientific information is participation in exhibitions, congresses and shows. In the period of 2011-2016, the Faculty staff was presented in these events: 75 developments and 43 medals were received.

#### **A8. Academic mobility of the students**

The University develops international co-operation with 71 universities in 66 countries of the world. Within this co-operation, the University and university-partners possibilities of academic mobility of the students training on the extended group 13.00.00 «Electric-heat power engineering» (13.03.02 Electric-power industry and electric technology, specialization «Power supply», 13.04.02 Electric power industry and electric technology, specializations «Power supply» and «Optimization of the developing systems of power supply») are being studied now.

#### **A9. International projects**

The Faculty researchers take part in the realization of such grant programmes as Slovakia National grant programme, 2014 (Slovakia), EranetPlus 2015 (Slovakia), Tempus Green Master Project (2013-2014), «The network of university programmes to train masters in the field of power supply and ecological control» (Italy). Such approach allows adopting the best practices of foreign countries for organization of educational, research and production activity.

E.A. Bahtina, associate professor of the Electric Technology, Automatics and Metrology Faculty, was awarded with the medal for merit in development of science and education by Eurochamber, DiplomaMerito diploma who took part in realization such foreign grant programmes as «National grant program» of Slovakia, 2014 (Slovakia), EranetPlus 2015-2016, with six-month training course on the base of «The Electric Technology, Automation and Informatics Faculty», «The Technological Engineering Faculty», Slovak Agricultural University in Nitra.

### **The list of the sociological survey carried out by the Sociological Survey and Marketing Department in 2011-2016**

1. «Applicant questionnaire»
2. «The choice of the University»
3. «The adaptation of the first-year students to the University»
4. «Educational work at the University»
5. «Educated and spare time activity of the students»
6. «The student initiatives»
7. «The information of training (questionnaire for students and lecturers)»
8. «Public catering at the University»
9. «The staff satisfaction by labour»
10. «Undergraduates' plans»
11. «Youth way of life»
12. «The head's questionnaire (employer survey)»
13. «The specialist's questionnaire (employer survey)»
14. «The quality of life for Stavropol population»



Certificate on public and professional accreditation of International Union of Public Academies of Sciences



## Certificate on accreditation of the Agency on Public Control of Quality of Education and Development of Career



**Diploma of the Winner of the Award of the Government of the  
Russian Federation in the field of quality, 2005**



ПРАВИТЕЛЬСТВО РОССИЙСКОЙ ФЕДЕРАЦИИ

**ДИПЛОМ**

ЛАУРЕАТА ПРЕМИИ ПРАВИТЕЛЬСТВА РОССИЙСКОЙ ФЕДЕРАЦИИ  
2005 ГОДА В ОБЛАСТИ КАЧЕСТВА

*Федеральному государственному  
образовательному учреждению  
высшего профессионального образования  
«Ставропольский государственный  
аграрный университет»  
г. Ставрополь*

ПРИСУЖДЕНА ПРЕМИЯ ПРАВИТЕЛЬСТВА  
РОССИЙСКОЙ ФЕДЕРАЦИИ В ОБЛАСТИ КАЧЕСТВА  
ЗА ДОСТИЖЕНИЕ ЗНАЧИТЕЛЬНЫХ РЕЗУЛЬТАТОВ В  
ОБЛАСТИ КАЧЕСТВА ПРОДУКЦИИ И УСЛУГ, А ТАКЖЕ  
ЗА ВНЕДРЕНИЕ ВЫСОКОЭФФЕКТИВНЫХ МЕТОДОВ  
УПРАВЛЕНИЯ КАЧЕСТВОМ.

Председатель Правительства Российской Федерации

М. Фрадков



Регистрационный номер 81

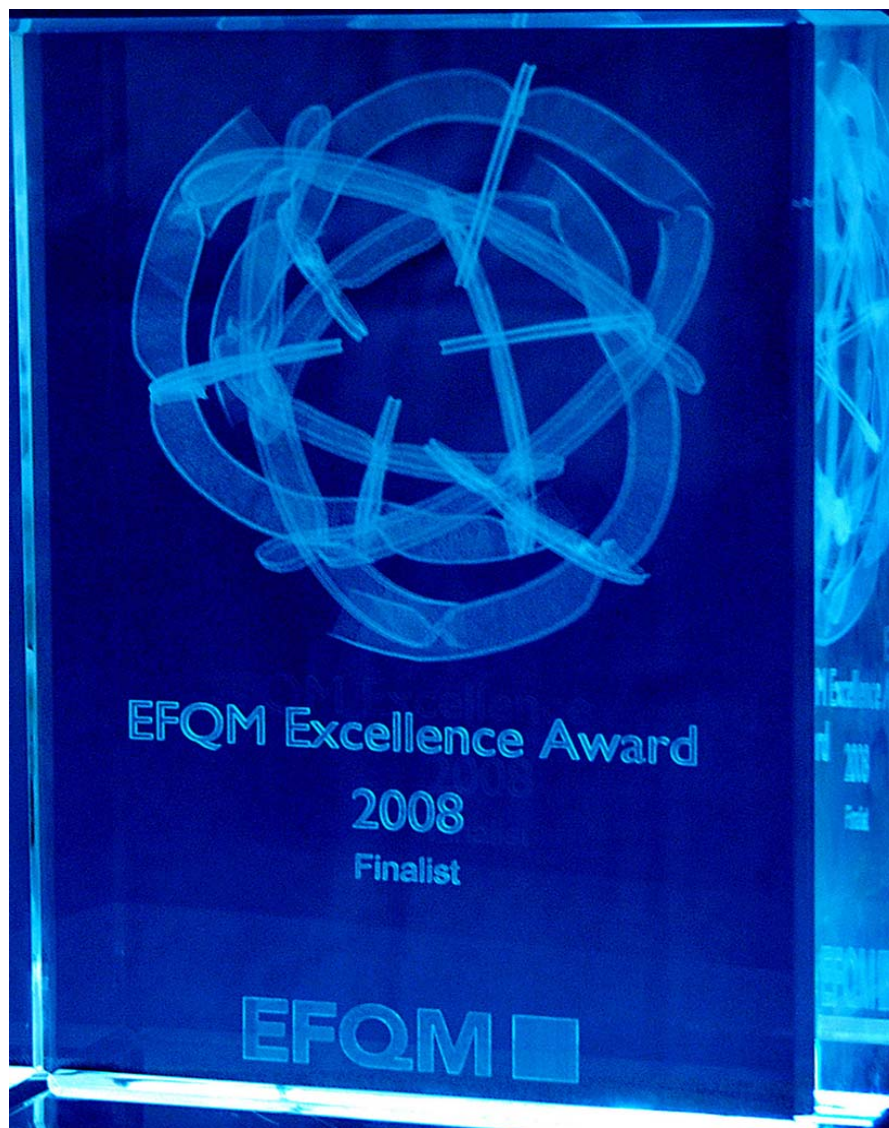
г. Москва

The diploma of the Winner of the Award of the Government of the Russian Federation in the field of quality, 2011



**APPENDIX 6**

**The Stavropol state agrarian university – the Finalist of the European tender in the field of quality "EFQM Excellence Award – 2018"**



**The Stavropol state agrarian university – the Prizewinner of the European tender in the field of quality "EFQM Excellence Award – 2010"**



**APPENDIX 8**

**The Stavropol state agrarian university – the Prizewinner of the European tender in the field of quality "EFQM Excellence Award – 2013"**



EFQM Excellence Award 2013



Federal State Budgetary Educational Establishment of the Higher Professional Education «STAVROPOL STATE AGRARIAN UNIVERSITY»

Prize Winner 2013

October 2013

issued by **EFQM**

Marc Amblard, CEO

**APPENDIX 9**

**The Stavropol state agrarian university – the Prizewinner of  
the European tender in the field of quality "EFQM Excellence Award  
– 2016"**





**APPENDIX 10**

**The Stavropol state agrarian university – the Winner of tender of  
the Ministry of Education and Science of the Russian Federation  
"Quality systems of training of graduates of educational  
institutions of professional education", 2010**



**APPENDIX 11**

**Dynamics of training by partners of faculty in 2012-2016 for the students studying on a cluster 13.00.00 "Electro-and power system"**



**Classes on the discipline " Electrical power supply" at the substation "Central" 110/10 kV substation "Zapadnaya" 110/10/6 kV branch "PJSC" IDGC of the North Caucasus " – West electrical networks"**



**Classes on discipline "Metrology" based design office of CJSC "Electrotechnical Plant "ENERGOMERA"**

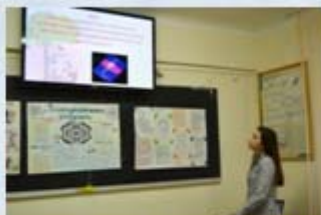


## APPENDIX 12

### Organization of open classes in a cluster 13.00.00 "Electro-and power system"

Кафедра	Количество открытых занятий				
	2012	2013	2014	2015	2016
Электротехники, автоматики и метрологии	13	14	12	15	22
Применения электроэнергии в сельском хозяйстве	5	8	12	9	14
Физики	11	14	13	17	22
Электроснабжения и эксплуатации электрооборудования	18	17	21	24	24
<b>ИТОГО</b>	<b>47</b>	<b>53</b>	<b>58</b>	<b>65</b>	<b>82</b>

### ORGANIZATION OF OPEN CLASSES



Open physics classes "Physics around us"



Open sessions on discipline "Simulation in the Electric Power Industry"



Open sessions on discipline "Metrology"



Open sessions on discipline "Electrical Equipment"

## APPENDIX 13

### Educational and tutorial maintenance of educational process in electronic and library system of the Stavropol GAU on a cluster 13.00.00 "Electro-and power system"

Кафедра	Учебных и учебно-методических пособий в 2012-2016 гг.	Электронных УМК	Количество лицензионных договоров, шт
Электротехники, автоматики и метрологии	142	14	13
Применения электроэнергии в сельском хозяйстве	82	4	10
Физики	48	1	10
Электроснабжения и эксплуатации электрооборудования	52	3	8
<b>ИТОГО</b>	<b>324</b>	<b>22</b>	<b>41</b>

### DEVELOPMENT OF ELECTRONIC EDUCATIONAL RESOURCES

The image displays a collection of digital educational resources for the 'Introduction to the specialty' (Введение в специальность) discipline. It includes:









- Course outlines (Учебно-методический комплекс) with sections for 'Block assignments' (Блок-тестовых заданий) and 'Practical tasks' (Практические задания).
- A 'Course of lectures' (Курс лекций) featuring a graphic of a lightning bolt striking a power line.
- Three official certificates (СВИДЕТЕЛЬСТВО) issued by the Stavropol State University, confirming the accreditation of the electronic educational resources.

Innovative technologies of training

Use of electronic resources on discipline "Electrical Engineering" in educational process

Электротехника

Список лекций

Раздел 1. ПОСТОЯННЫЙ ТОК	
	<b>Лекция №1</b> Простейшие линейная цепь постоянного тока. Основные определения и доводы. Электродвижущая сила (ЭДС) напряжения и их положительная направления. Сопротивление проводника.
	<b>Лекция №2</b> Закон Ома для участка цепи, содержащего и не содержащего ЭДС. Законы Кирхгофа. Потенциальная диаграмма. Источники тока и напряжения, преобразование их связи.
	<b>Лекция №3</b> Преобразование цепи электрических цепей последовательное, параллельное, смешанное соединения. Преобразование треугольника в эквивалентную звезду и звезда в треугольник. Методы расчета сложных цепей. Метод уравнений. Метод контурных токов.
	<b>Лекция №4</b> Метод наложения. Входящие и выходящие проводимости ветвей. Теорема взаимности. Теорема компенсации. I соответствия в электрических цепях. Замена нескольких параллельных ветвей с источниками ЭДС одной эквивалентной.
	<b>Лекция №5</b> Активные и пассивные двухполюсники. Метод эквивалентного генератора. Метод двух узлов. Метод потенциалов. Передача энергии от активного двухполюсника нагрузке. Линия передачи энергии. Баланс мощностей.
	<b>Лекция №6</b> Нелинейные электрические цепи постоянного тока.
Раздел 2. СВЯЗ/СОИДАННЫЙ ТОК	
	<b>Лекция №7-9</b> (text partially obscured)
	<b>Лекция №9-10</b> Законы Кирхгофа в комплексной (символической) форме. Комплексный метод расчета электрических цепей. Топографические (потенциальные) диаграммы. Изображение равности потенциалов на комплексной плоскости.

**Developer: Associate Professor of the department "Electrical Engineering, Automation and Metrology" Vakhtina E.A.**

**СВИДЕТЕЛЬСТВО О РЕГИСТРАЦИИ ЭЛЕКТРОННОГО РЕСУРСА**

№ 18292

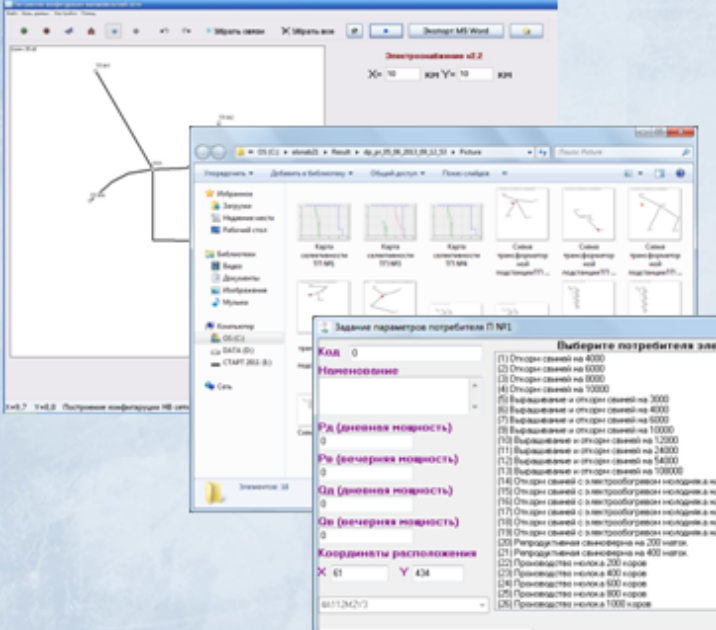
Дата регистрации: 18 мая 2013 года

Автор: Вахтина Е.А.

Предметная область: ФГОС ВПО Специальный государственный аттестационный ресурс по дисциплине "Электротехника"

18.05.2013

Use of computer-aided design in the discipline "Design of Electric Power Systems"




Электротехника v2.2

X: 10 км Y: 10 км

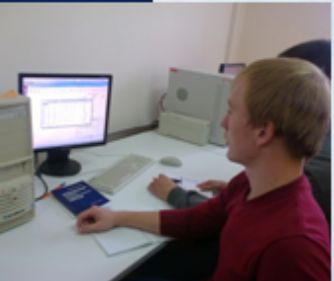
Выборите потребителей электрической энергии

Код	Наименование
1	Открыт световый на 4000
2	Открыт световый на 6000
3	Открыт световый на 8000
4	Открыт световый на 10000
5	Выходные и открыт световый на 3000
6	Выходные и открыт световый на 4000
7	Выходные и открыт световый на 5000
8	Выходные и открыт световый на 10000
9	Выходные и открыт световый на 12000
10	Выходные и открыт световый на 24000
11	Выходные и открыт световый на 54000
12	Выходные и открыт световый на 100000
13	Открыт световый с электрообогревом молниезащита на 3000
14	Открыт световый с электрообогревом молниезащита на 4000
15	Открыт световый с электрообогревом молниезащита на 6000
16	Открыт световый с электрообогревом молниезащита на 8000
17	Открыт световый с электрообогревом молниезащита на 10000
18	Открыт световый с электрообогревом молниезащита на 12000
19	Открыт световый с электрообогревом молниезащита на 200 мварт.
20	Ретроградная сферическая на 400 мварт.
21	Ретроградная сферическая на 600 мварт.
22	Проводящая мяч на 200 мварт.
23	Проводящая мяч на 400 мварт.
24	Проводящая мяч на 600 мварт.
25	Проводящая мяч на 800 мварт.
26	Проводящая мяч на 1000 мварт.



С. В. Антошин, Л. И. Козловский  
П. И. Козловский, А. И. Низькин

**ПРОЕКТИРОВАНИЕ  
ЭЛЕКТРО-  
ЭНЕРГЕТИЧЕСКИХ  
СИСТЕМ**



## HOME PAGE OF THE PROJECT "PROFESSOR ON-LINE" Winner, Associate Professor Zhavoronkova M.S.

ПРЕПОДАВАТЕЛЬ ОН-ЛАЙН  
Мария Сергеевна  
Жаворонкова

email


[Регистрация](#) [Восстановление пароля](#)

[Главная](#) / [Страница](#) / [Изучаем лекционный курс](#)

### НАВИГАТОР

- » ЗДРАВСТВУЙТЕ
- » ДАВАЙТЕ ЗНАКОМИТЬСЯ
- » СТУДЕНТУ
  - » ИЗУЧАЕМ ЛЕКЦИОННЫЙ КУРС
  - » ПРОВЕРЯЕМ СЕБЯ
  - » ВЫПОЛНЯЕМ ДОМАШНЕЕ ЗАДАНИЕ
  - » ЗАКРЕПЛЯЕМ НА ПРАКТИКЕ
  - » УЗНАЙ БОЛЬШЕ
  - » ВЫПОЛНЯЕМ КУРСОВУЮ РАБОТУ
  - » УЗНАЙ СВОЙ РЕЙТИНГ
  - » ГОТОВИМСЯ К ОЛИМПИАДЕ
  - » ГОТОВИМСЯ К ЭКЗАМЕНУ
  - » ЗАЙМИСЬ НАУКОЙ

### ИЗУЧАЕМ ЛЕКЦИОННЫЙ КУРС



Дисциплина «Метрология, стандартизация и сертификация» является базой при подготовке инженеров электротехнического профиля и должна формировать у вас современное электрофизическое мировоззрение и обеспечить основу для последующего изучения специальных электротехнических дисциплин.

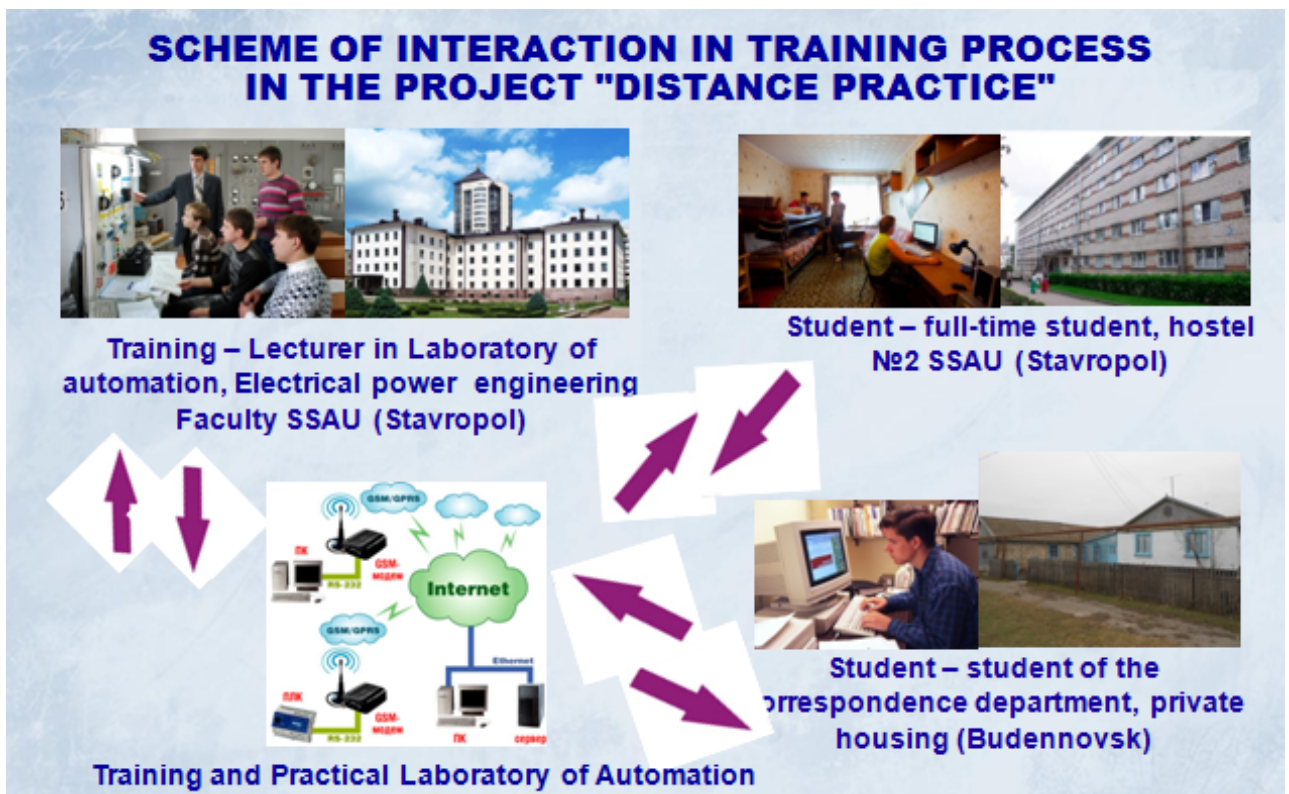
*Цель дисциплины:* формирование теоретических знаний и практических навыков в области метрологии, стандартизации и сертификации в свете действующего законодательства РФ, а также в рамках регионального и международного сотрудничества.

**ГЛОССАРИЙ** по дисциплине смотри [здесь](#).

### ЧТО БУДЕМ ИЗУЧАТЬ?

Associate Professor  
M.S. Zhavoronkova -  
twice winner of the  
"Grants for young  
professors of state  
universities of Russia"  
Vladimir Potanin Charity  
Fund

Remote Practice project of laboratory "Automation" of electrical power faculty







**APPENDIX 16**

**Bases of practice of the students studying on a cluster 13.00.00  
"Electro-and power system"**

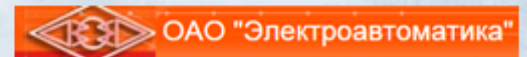
<b>Направление подготовки</b>	<b>курс</b>	<b>Название практики</b>	<b>Кол-во недель</b>	<b>Кол-во баз практик</b>
<b>БАКАЛАВРИАТ</b>				
<b>13.03.02 «Электроэнергетика и электротехника» академический</b>	<b>1</b>	<b>Учебная практика</b>	<b>2</b>	<b>19</b>
	<b>2</b>	<b>Ремонтно-технологическая</b>	<b>2,7</b>	<b>17</b>
	<b>3</b>	<b>Эксплуатационная</b>	<b>3,3</b>	<b>17</b>
	<b>4</b>	<b>Преддипломная</b>	<b>2</b>	<b>23</b>
<b>13.03.02 «Электроэнергетика и электротехника» прикладной</b>	<b>1</b>	<b>Учебная практика</b>	<b>4,7</b>	<b>19</b>
	<b>2</b>	<b>Ремонтно-технологическая</b>	<b>6,7</b>	<b>17</b>
	<b>3</b>	<b>Эксплуатационная</b>	<b>3,3</b>	<b>17</b>
	<b>4</b>	<b>Преддипломная</b>	<b>2</b>	<b>23</b>
<b>МАГИСТРАТУРА</b>				
<b>13.04.02 «Электроэнергетика и электротехника»</b>	<b>1</b>	<b>Учебная</b>	<b>2</b>	<b>19</b>
	<b>1 и 2</b>	<b>Эксплуатационная</b>	<b>12</b>	<b>17</b>
	<b>2</b>	<b>Научно-исследовательская</b>	<b>16</b>	<b>17</b>
	<b>2</b>	<b>Преддипломная</b>	<b>17</b>	<b>23</b>

## STATIONS OF MANUFACTURING PRACTICE – repair and technological, operational (out of university)



### Practice stations (Partner Companies)

**PJSC "IDGC SC - Stavropolenergo"**  
**PJSC "Stavropol radio factory" Signal "**  
**PJSC "Stavropolenergosbyt"**  
**GUPSK "Stavropolkommunelektro"**  
**JSC "Electroautomatics"**  
**JSC "ENERGOMERA"**  
**JSC "Teploset"**  
**Farms of AIC North Caucasus Federal District**



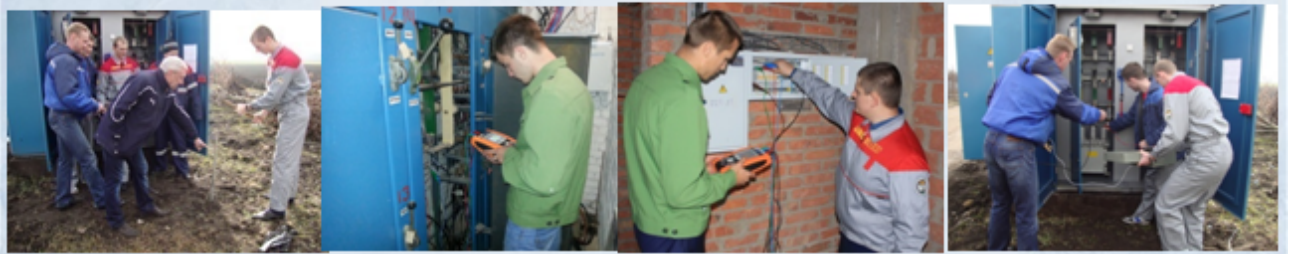
## ELECTRO-TECHNICAL LABORATORY

### Station for manufacturing practice – operating (stationary)



Test Engineer, Third group of access

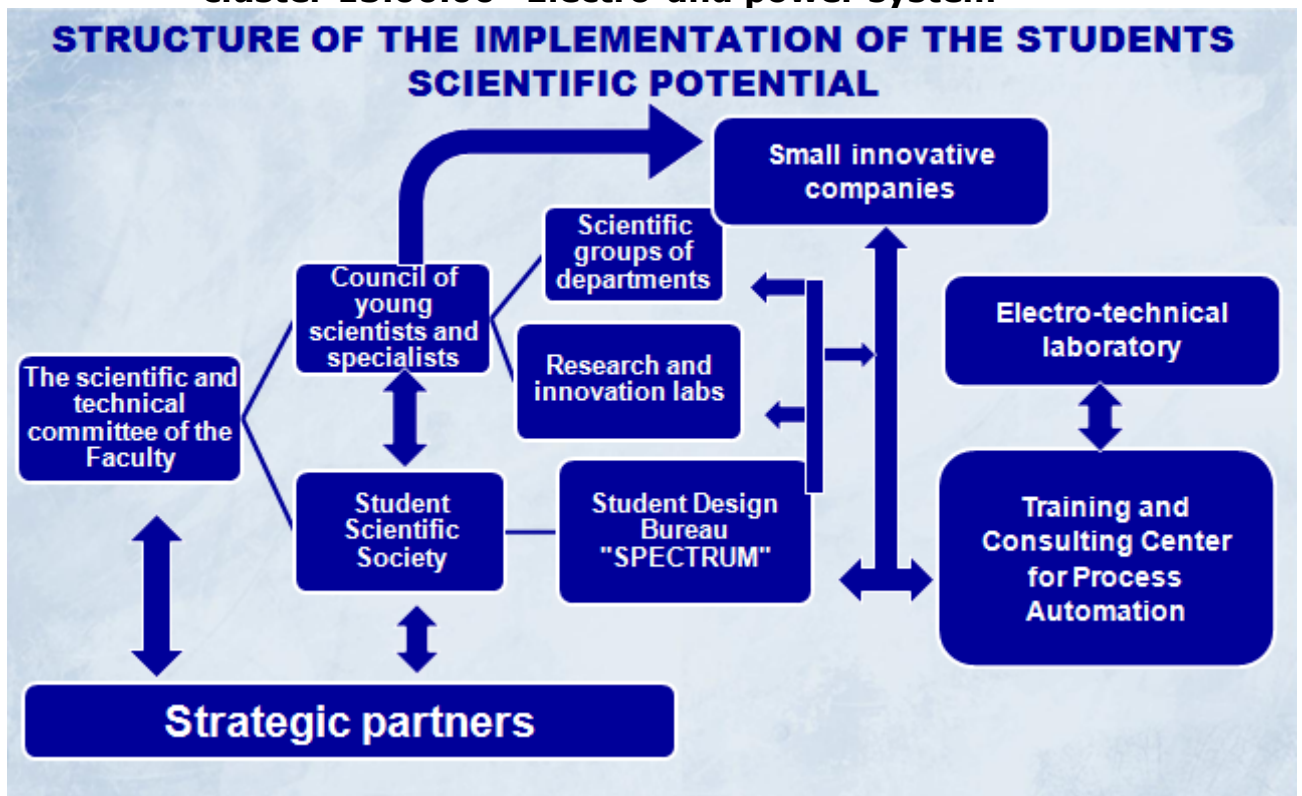
Certificate of Accreditation for Electro-technical Laboratory



**APPENDIX 17**  
**Tutorial maintenance of students' individual work, skills training,**  
**the state final examination on a cluster 13.00.00 "Electro-and**  
**power system"**



Structure of implementation of scientific potential of students on a cluster 13.00.00 "Electro-and power system"



Participation of students in federal grant programs

**STUDENT PARTICIPATION IN THE FEDERAL PROGRAM "UMNIK" IN 2012-2016**

Departments	<b>"UMNIK"</b>									
	<b>2012</b>		<b>2013</b>		<b>2014</b>		<b>2015</b>		<b>2016</b>	
	applicati ons	prizes	applicati ons	prizes	applicati ons	prizes	applicatio ns	prizes	applicatio ns	prizes
EAM	6	2	8	2	9	2	12	2	6	-
PEEA	2	1	1	1	4	1	2	1	6	-
Physics	3	1	4	-	4	0	1	-	3	-
EEEE	2	1	-	-	2	0	2	-	5	1
<b>Total:</b>	<b>13</b>	<b>5</b>	<b>13</b>	<b>3</b>	<b>19</b>	<b>3</b>	<b>17</b>	<b>3</b>	<b>20</b>	<b>1</b>



**Participation in the federal program "UMNIK-2015-2016"**

**WINNERS "UMNIK Russia ":**

Shunina Anna - 4th year student;  
Sergey Pisarenko - 2nd year student;  
Perkov Eugeny - 5th year student;  
Bairamalyev Sultan - Master 2nd year

**WINNERS "UMNIK SK ":**

Fedoseeva Tatiana - a postgraduate student;  
Saveleva Elena - 4th year student.



Participation of students in the All-Russian and international exhibitions

**Participation of students in international and national exhibition in 2015-2016**

**16 medals**

- International specialized exhibition "High Technologies. Innovation. Investments" (Hi-Tech), St. Petersburg, 2015-2016 .;
- XXIV International Agricultural Exhibition "Agrorus 2015-2016";
- Russian Agricultural Exhibition "Golden Autumn 2015-2016";
- Biotechnology Exhibition -fair "RosBio Tech"



**Achievements of students in the All-Russian tender of achievements of talented youth "National property of Russia"**

**Falko Kirill - Master of 1st year**  
**The winner of the All-Russian contest of talented youth achievements "NATIONAL PROPERTY OF RUSSIA" in "Scientific and Technical Creativity"**





Results of work of student's design office "Spectrum"

**Student Design Bureau "SPECTRUM"**



We implemented 12 contracts under the program "UMNIK";  
We received 37 medals at national and international exhibitions; published 127 scientific articles



**Professional orientation work on set of students for the direction of preparation 13.03.02 Power industry and electrical equipment**

**COMPUTER REPAIR, INTERNET SETTINGS AND CREATING A LOCAL NETWORK IN PETROVSKY DISTRICT SCHOOLS UNDER CAREER GUIDANCE**



**GAMES OF SKILL, CONTESTS AND COMPETITIONS WITH STUDENTS GRADES 10-11**



Tender of technical achievements of youth




Section of scientific and technical creativity of youth "Tech Hobby"

**SECTION OF SCIENTIFIC AND TECHNICAL CREATIVITY  
"TEHNOHOBBY"**



As part of the section we opened a profile class of small Academy of Sciences : "Robotics" and "Entertaining ELECTRONICS".

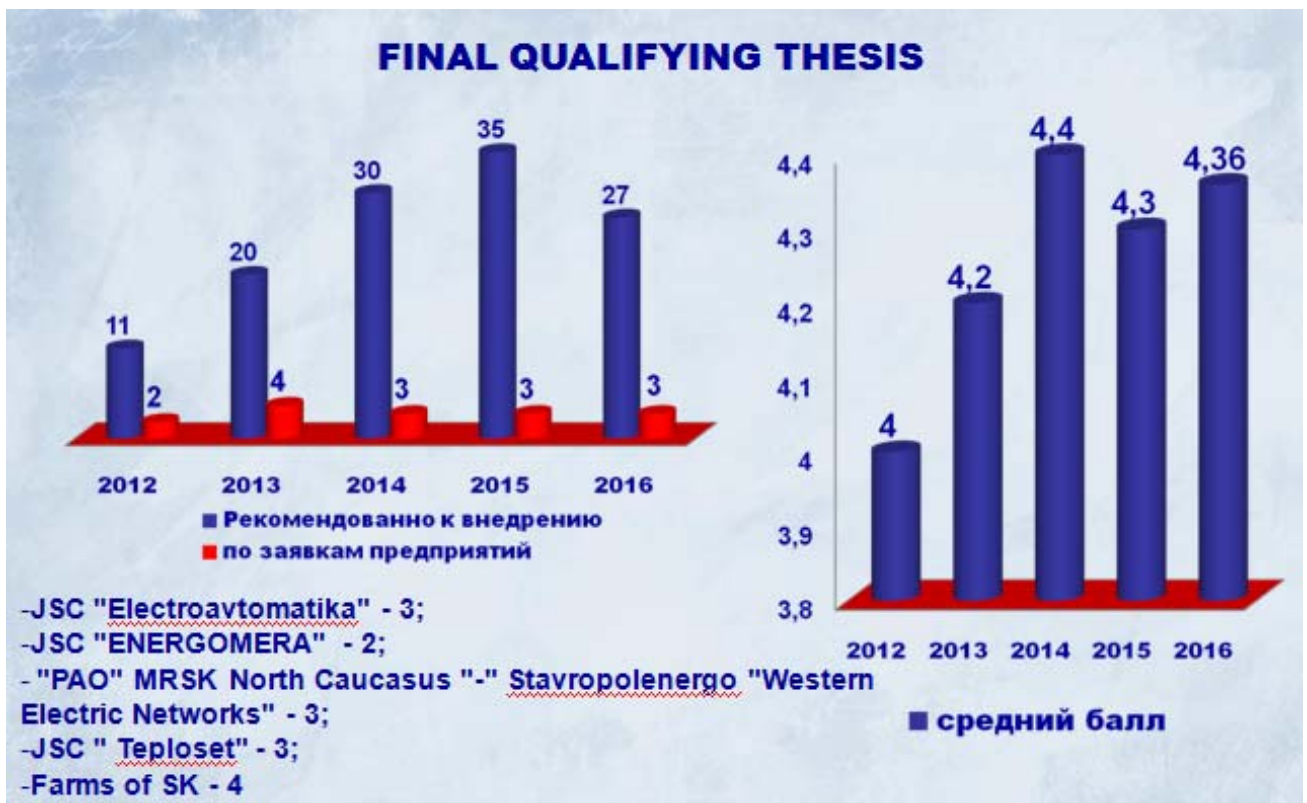
**Interactive lessons "Robotics" in the Turkmen area  
(Letnya Stavks, Ovoshhy, Kambulat, Vladimirovka)**



The collage includes several photographs of students in a classroom, a group of students holding certificates, and five images of various robot projects, including a small car-like robot, a robot with a camera, and a robot with a large wheel.

## APPENDIX 26

### Results of protection of final qualification works of students on the direction of preparation 13.03.02 Power industry and electrical equipment



**APPENDIX 27**
**Qualitative composition of electrical power faculty**

Кафедра	Общее кол-во ППС	Численность сотрудников			% ППС с учеными степенями и званиями	Средний возраст	Кол-во аспирантов
		С ученой степенью или званием	Доктора наук, профессора	Кандидаты, доценты			
<b>Электроснабжение и эксплуатация электрооборудования</b>	13	13	1	11	100	53,5	-
<b>Применение электрической энергии в с.х.</b>	9	9	1	6	100	47,9	4
<b>Электротехника, автоматики и метрологии</b>	12	10	0	9	83,3	45	2
<b>Физика</b>	11	10	2	7	90,9	54,9	2
<b>Итого</b>	<b>45</b>	<b>42</b>	<b>5</b>	<b>33</b>	<b>93,3</b>	<b>50,3</b>	<b>8</b>

**Release of educational and methodical literature for the students  
studying on a cluster 13.00.00 "Electro-and power system"**

Кафедра	Количество изданных, шт				
	2012	2013	2014	2015	2016
Электротехники, автоматики и метрологии	<b>7</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>6</b>
Применения электроэнергии в сельском хозяйстве	<b>5</b>	<b>8</b>	<b>12</b>	<b>9</b>	<b>7</b>
Физики	<b>13</b>	<b>14</b>	<b>12</b>	<b>15</b>	<b>22</b>
Электроснабжения и эксплуатации электрооборудования	<b>8</b>	<b>8</b>	<b>11</b>	<b>29</b>	<b>14</b>
<b>ИТОГО</b>	<b>33</b>	<b>39</b>	<b>43</b>	<b>61</b>	<b>49</b>



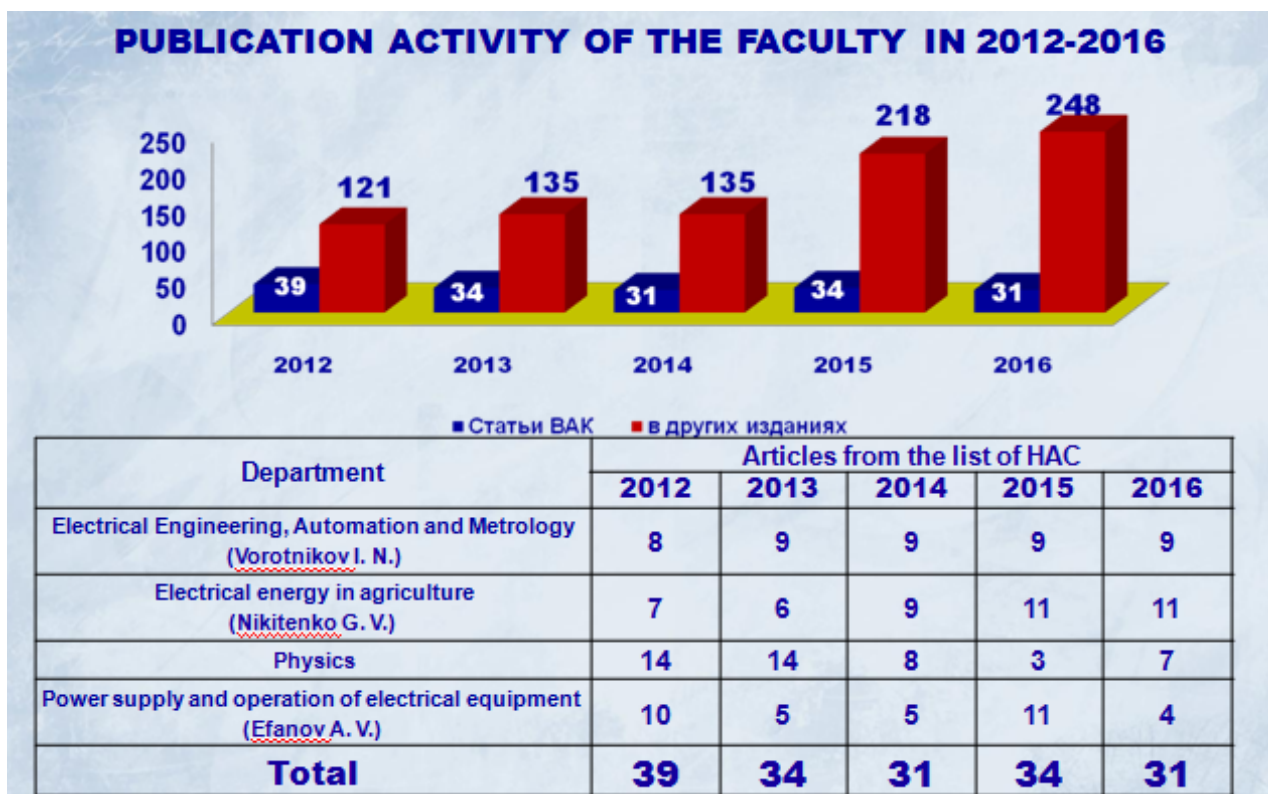
Кафедра	Количество изданных пособий, шт		
	2016	В т.ч. с грифом	В т.ч. в центральных издательствах
Электротехники, автоматики и метрологии	6	1	1
Применения электроэнергии в сельском хозяйстве	7	-	1
Физики	22	-	-
Электроснабжения и эксплуатации электрооборудования	14	5	9
<b>ИТОГО</b>	<b>49</b>	<b>6</b>	<b>11</b>

**In 2016 we published 11 textbooks in the central publishing houses "FORUM", "Lan' "**

**In 2016 we received: 5 classification stamps of Ministry of Agriculture and 1 classification stamp of the Russian Ministry of Energy**



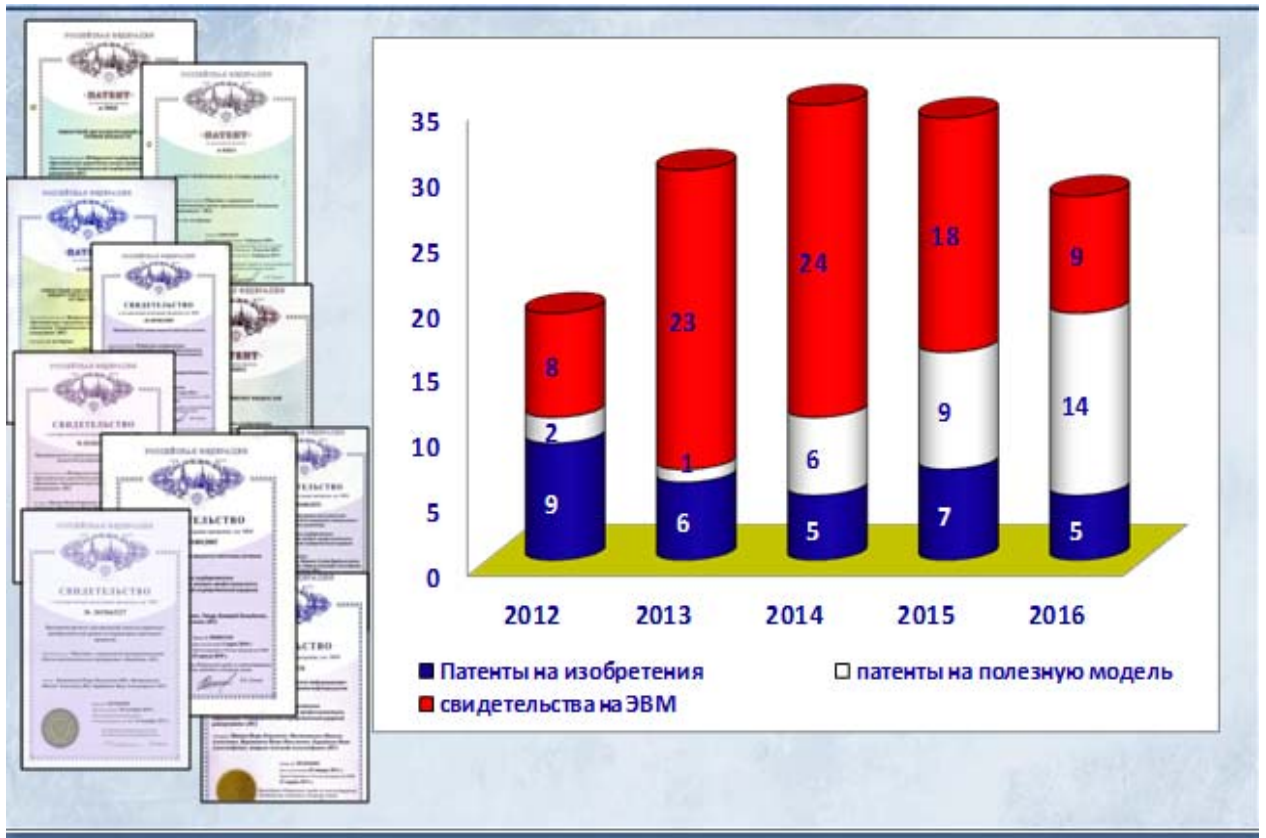
### Printing activity of the faculty of electrical power faculty in 2012-2016



**Articles of the faculty of electrical power faculty in the international databases**

<b>ARTICLE OF FACULTY MEMBERS IN INTERNATIONAL DATABASES</b>						
<b>Department</b>	<b>Scopus, attached to the university</b>				<b>Total</b>	<b>Web of Science in 2015-2016</b>
	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>		
Electrical energy in agriculture	-	-	3	3	6	1
Power supply and operation of electrical equipment	-	-	2	3	5	1
Physics	-	1	1	3	5	-
Electrical Engineering, Automation and Metrology	1	1	2	3	7	2
<b>Total:</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>12</b>	<b>23</b>	<b>4</b>

Obtaining by the faculty security documents for inventions



Dynamics of issuing of monographs of the faculty (scientific work)

<b>MONOGRAPHS IN 2012-2016</b>					
Department	Monographs				
	2012	2013	2014	2015	2016
Electrical Engineering, Automation and Metrology	1	3	2	1	1
Electrical energy in agriculture	1	2	2	2	1
Physics	1	2	-	2	1
Power supply and operation of electrical equipment	-	1	1	1	-
<b>Total</b>	<b>3</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>3</b>










**In 2012-2016 we published 25 monographs**

**A quoting of scientific and pedagogical workers in the Russian index of scientific citing**

№	Department	Authors in RISC	The h-index	
			January 2016	January 2017
1	Electrical energy in agriculture	10	13,1	23,8
2	Physics	11	10,7	21,9
3	Power supply and operation of electrical equipment	10	10,4	18,9
4	Electrical Engineering, Automation and Metrology	10	9,6	18,8
<b>EPEF</b>		<b>41</b>	<b>10,9</b>	<b>20,9</b>

Department	Self citation %			
	January 2015	December 2016	January 2017	Plan 2017
Power supply and operation of electrical equipment	64,4	72,7	56,1	36,1
Electrical energy in agriculture	42,3	51,0	44,8	24,8
Electrical Engineering, Automation and Metrology	37,8	42,7	23,5	13,5
Physics	41,2	49,1	22,8	12,8
<b>EPEF</b>	<b>46,4</b>	<b>63,0</b>	<b>42,3</b>	<b>20,0</b>

International training of the faculty





## CERTIFICATE

This is to certify that

**MS ELENA VAKHTINA**, born 16.06.1961

from *Stavropol State Agrarian University, Russian federation*

has realised a post-doc mobility

within the Erasmus Mundus project **Eranet Plus: Euro-Russian Academic network PLUS nr. 2012-2734/001-001-EMA2**

at the *Slovak University of Agriculture in Nitra*,

*Faculty of Engineering, Slovakia*

in **2015/16 Academic Year**,

from **2.11.2015** till **30.6.2016**

Nitra, 30.6.2016

**dr. h. c. Prof. Ing. Peter Bielik, PhD.**  
Rector, Eranet Plus local coordinator

SLOVENSKÁ POĽNOHOSPODÁRSKA  
UNIVERZITA V NITRE  
REKTORÁT  
Trieda Andreja Hlinku 2, 949 76 NITRA

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compétente d'accorder au porteur du présent document toute  
aide et protection légitime*



*President of the European Scientific-Industrial Chamber requests  
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**Mission Diplomatique**  
*Diplomatic Mission*

**Union Européenne**



Type  
**CD**

Code  
**UE**

N°  
**000671**

Nom / Surname  
**VAKHTINA**

Prénom / Name  
**ELENA A.**

Date de délivrance: 01/11/2016

Date d'expiration: 31/10/2021

Signature du titulaire / Signature of bearer



**Advanced training of research and teaching employees of the faculty**

**ADVANCED TRAINING OF RESEARCH AND TEACHING EMPLOYEES OF THE FACULTY**

Department	2014		2015		2016		Plan 2017
	Profiled	General education / Pedagogical	Profiled	General education / Pedagogical	Profiled	General education / Pedagogical	
Electrical Engineering, Automation and Metrology	3	3	1	7	6	2	2
Application of electrical energy in agriculture	1	2	2	2	8	1	1
Physics	3	6	9	2	1	5	2
Power supply and operation of electrical equipment	7	1	2	8	2	5	1
<b>TOTAL</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>19</b>	<b>17</b>	<b>16</b>	<b>6</b>

**CERTIFICATES OF ADVANCED TRAINING OF RESEARCH AND TEACHING EMPLOYEES OF THE FACULTY**



**Material and technical resources of electrical power faculty****MATERIAL AND TECHNICAL BASE**

Department	Lecture rooms		Study rooms		Educational and research laboratories	
	Number, pcs	Area, sq.m.	Number, pcs	Area, sq.m.	Number, pcs	Area, sq.m.
Electrical Engineering, Automation and Metrology	1	96	7	255.4	2	42.7
Physics	1	108	5	173.3	1	17.8
Application of electrical energy in agriculture	-	-	6	357.7	2	78.7
Power supply and operation of electrical equipment	-	-	7	418.6	1	17.7
<b>Total:</b>	<b>2</b>	<b>204</b>	<b>25</b>	<b>1205</b>	<b>6</b>	<b>156.9</b>
<b>AREA of training and laboratory facilities: 1565.9 sq.m.</b>						

**LABORATORY "AUTOMATION"**

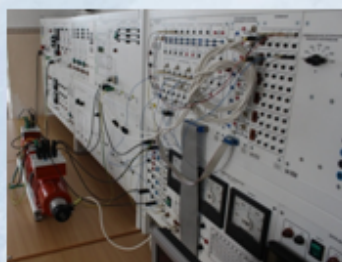
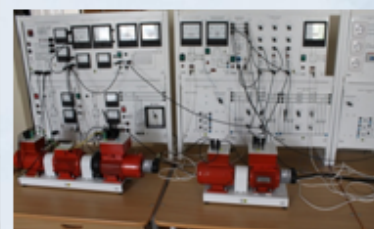
There was opened Regional Training and Consulting Centre in the field of automated process control systems on the basis of the laboratory "Automation"

**FINANCING:**

**SSAU - 398 thousand rubles;**  
**LLC NGO "OVEN" - 150 thousand rubles.**

## TRAINING AND RESEARCH LABORATORIES "POWER INDUSTRY", "POWER SUPPLY"

training direction "Power and Electrical Engineering"



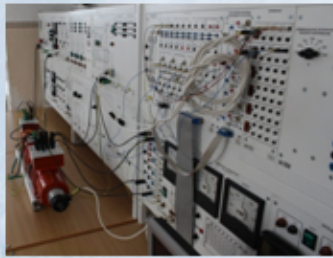
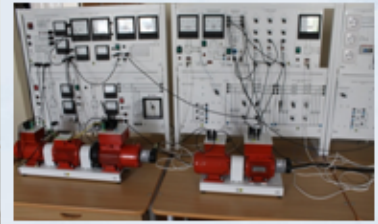
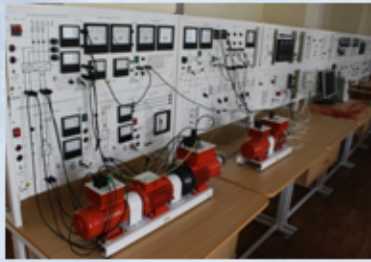
## LABORATORY "ELECTRICAL EQUIPMENT INSTALLATION»



In 2014-2015 academic year, the laboratory of electrical equipment installation was re-equipped with modern stands of the electrical firm "Interelektrokomplekt", totaling 170 thousand rubles.

## **TRAINING AND RESEARCH LABORATORIES "POWER INDUSTRY", "POWER SUPPLY"**

training direction "Power and Electrical Engineering"



## **LABORATORY "ELECTRIC DRIVE AND ELECTRICAL EQUIPMENT"**



## **LABORATORY "ELECTROTECHNOLOGY AND ENERGY SAVING"**



## LABORATORY "THEORY OF ELECTRICAL ENGINEERING"



## LABORATORY "ELECTRICAL MEASUREMENTS"



## CREATION OF POLYGON "ALTERNATIVE ENERGY SOURCES"



Photovoltaic solar energy  
converter



**Laboratory of "Automation systems of the commercial accounting of the electric power"**

**RECONSTRUCTION OF THE LABORATORY IN 2015-2016  
ACADEMIC YEAR "Automated systems of commercial accounting of electric power" AMR**



**Equipment worth 500 thousand rub. was installed.**



**BASE FOR MANUFACTURING PRACTICE CJSC  
"ELECTROTECHNICAL PLANTS "ENERGOMERA"**



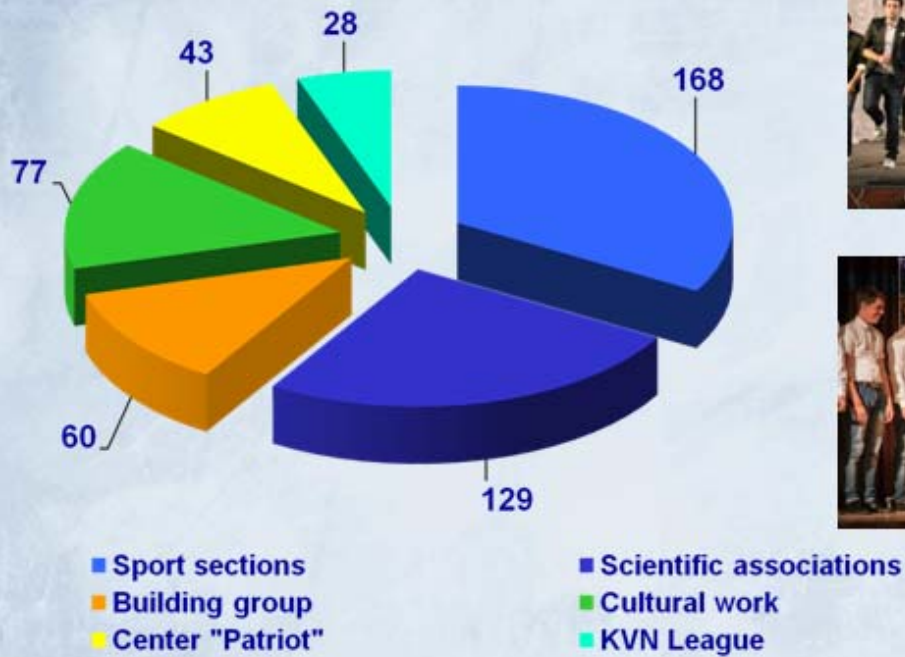
**SAVELYEVA ELENA**  
Nominal scholarship  
winner of the "President  
of Energomera"

**Professional development  
courses of RTE**

In 2016, 9 students took additional courses on the program: "Operation, programming of multi-function meters and use of AMR manufactured by CJSC "Electrotechnical plants "Energomera".

**Educational operation with students**

**INVOLVEMENT OF STUDENTS IN EXTRACURRICULAR ACTIVITY**



**CREATIVE GROUPS OF THE FACULTY**



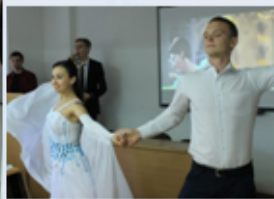
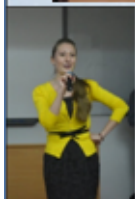


**Folk Dance Ensemble "Zadorinka"**



**Folk Dance Ensemble "SLAVNITSA"**

## **CREATIVE EVENINGS WITH TEACHERS-VETERANS OF THE FACULTY**





## DIALOGUE OF CULTURES



## STUDENTS' LIFE IN HOSTEL



Organization of annual competitions among faculty students living in the hostel



**Achievements of students in sporting activities**

**Every year, the faculty organizes more than 200 activities aimed at healthy lifestyle and therefore the faculty for the past 5 years wins prizes in the competition of Stavropol State Agrarian University "The Healthiest Faculty"**



**WINNERS OF THE CHAMPIONSHIP OF SFD IN POWERLIFTING AND INDIVIDUAL EXERCISES, 19-20 NOVEMBER 2016**



**They executed the specification of the candidate for master of sports:**

- Kolesnikov Kirill – 2<sup>nd</sup> year student;
- Zatonskaya Elena – 4<sup>th</sup> year student.



Ставропольский государственный аграрный университет  
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Электротехнический факультет  
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 Электротехнический факультет

EFQM  
 EFQM  
 EFQM  
 EFQM

Здоровый образ жизни Том I  
 Здоровый образ жизни Том II  
 Здоровый образ жизни Том III  
 Здоровый образ жизни Том IV

**85% OF STUDENTS OF THE FACULTY TAKE PART IN THE PROGRAM "HEALTHY LIFESTYLE"**

**CLINICAL EXAMINATION AND VACCINATION OF STUDENTS AND STAFF OF THE FACULTY**

## PARTICIPATION IN THE ANNUAL DONOR DAY

