



Agencia Andaluza del Conocimiento
CONSEJERÍA DE ECONOMÍA, INNOVACIÓN Y CIENCIA

*Assessment Report
of Main Professional Education Program
on Higher Education:*

MASTER'S PROGRAMME ON

'FUNDAMENTAL AND APPLIED CHEMISTRY'

People's Friendship University of Russia (PFUR)

FACULTY OF SCIENCES

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I. Information on accreditation procedure

Subject of accreditation procedure

Educational programme	Degree to be acquired	ETCS	Duration	Form of education	Language of instruction
FUNDAMENTAL AND APPLIED CHEMISTRY	MASTER	120	2 years	Full-time	Main - Russian

Date of on-site visit: 6-10 June 2017.

Panel members:

Javier Fernández Sanz, Full Professor of Physical Chemistry, Faculty of Chemistry, University of Seville.

Inmaculada Robina Ramírez, Full Professor of Organic Chemistry, Faculty of Chemistry, University of Seville.

Mikhail Soloviev, Ph.D., Vice-Rector for Network Cooperation and Social Partnership, Nizhny Novgorod State Pedagogical University named after Kozma Minin.

Shinkarev Sergey, General Director, Polycomplex LLC.

Apolosova Anna, student, Russian Chemical and Technological University named after D.I. Mendeleev University.

II. Panel members report

Introduction: aims, structure and general provisions of the accreditation procedure

Agencies for assessment, accreditation (DEVA-AAC: Andalusian Agency of Knowledge, Department of Evaluation and Accreditation, Córdoba, Spain), and control of the quality of education and career development (AKKORK: Autonomous Non-Profit Organization Agency for Higher Education Quality Assurance and Career Development, Moscow, Russia) on February 20, 2016 signed an agreement on cooperation in international accreditation of an educational program in the Peoples' Friendship University of Russia (Moscow, Russia). To this end, a panel group was created, consisting of two Spanish reviewers (university academics) with the assistance of three Russian reviewers from the academic and extra-academic environment including representatives of the student community.

All members of the group participated in a two-day visit to the university in June 2017. During the visit, meetings and interviews were held with the university's top management, the deans, students and graduates of all educational programs, as well as with employers and with the teaching staff. Earlier, the University had provided AKKORK with a self-assessment report and applications, which were later translated into English and forwarded to the agency DEVA-AAC and international members of the reviewers committee. Evaluation of educational programs by the reviewers is based on the sent written material, additional documents, provided on request, and the results of the visit.

Review of the institutional profile of the Peoples' Friendship University of Russia

Russia joined the Bologna process in 2003 and since then has consistently adhered to the basic objectives of the Declaration at the national and institutional levels. Part of this process was the introduction of a two-stage system of education at the national level in accordance with the "Framework for Qualifications of the European Higher Education Area". Program of the first stage usually last 4 years; graduates acquire a bachelor's degree. The second stage includes two years of study and ends with the acquiring of a master's degree. Graduates can later continue their education already at PhD (PhD - Doctor of Philosophy), and then the Doctor of sciences. It should be noted that the Peoples' Friendship University of Russia is a pioneer in the introduction of the Bologna process in the educational area of the Russian Federation.

Federal state educational standards define the learning outcomes of each educational program at each level of qualification. Also, the structure and content of the curriculum depends largely on the requirements of the Ministry of Education and Science of the Russian Federation.

All bachelor's and master's programs consist of several cycles, that is, courses of lectures from different disciplinary areas, the educational program do not focus only on a specific educational area, but offer more general education, such as the humanities and social sciences. This is especially true for bachelor students.

Peoples' Friendship University of Russia was founded on February 5, 1960 by the decision of the Government of the USSR. On February 22, 1961 the University was named after Patrice Lumumba - one of the symbols of the struggle for the independence of the peoples of Africa. The Russian language classes at the preparatory faculty for foreign students began in 1960, and at the six basic faculties of the University (Engineering, History and Philology, Medical, Agricultural, Physical, Mathematical and Natural Sciences, Economics and Law) - on September 1, 1961. In 1964, the University became a member of the International Association of Universities (IAU).

Nowadays the structure of the PFUR comprises 5 main faculties: Faculty of Physics, Mathematics and Natural Sciences, Faculty of Ecology, Faculty of Philology, Faculty of Humanities and Social Sciences, Faculty of Economics, Engineering Academy; 10 institutes: Medical Institute, Law Institute, Institute of Foreign Languages, Agrarian-technological Institute, Institute of World Economy and Business, Institute of Hospitality Business and Tourism, Academic Research Institute of Gravitation and Cosmology, Institute of

Medical and Biological Problems, Academic Research Institute of Comparative Educational Policy, Institute of Space Technologies.

The distinctive features of the educational process at the Peoples' Friendship University of Russia are:

- Credit system ECTS
- European Diploma Supplement
- Worldwide academic mobility
- Up to 800 academic hours of foreign languages learning
- Diploma in translation (2-3 foreign languages)
- Over 1500 courses for continuing education
- All postgraduate forms of education (master, PhD, DSI, Clinical residency, internship)
- Teaching in foreign languages

PFUR has the right to set its own educational standards (sanctioned by Russian President, 2012).

The University has a team consisting of more than 5,000 employees, among them - about 2,500 teachers, including 500 academics and doctors, more than 1,200 professors and candidates of science, 57 full and correspondent members of the Russian Academy of Science and field-specific academies, 28 Honored Scientists of Russia, 26 full members of foreign academies and scientific societies.

The educational process and research activities of the University are maintained by the sufficient material and technical equipment. For example, the following indicators can describe the fully computerized library of the PFUR:

- Library branches and reading halls in 5 University buildings
- More than 17,000 users
- 1 800.000 copies and library items at the library stock
- Online access to more than 36 foreign & Russian databases
- 90 000 foreign literature pieces in 70 languages
- Electronic collections of PFUR professors' publications
- University has 45 educational and scientific centers, 150 scientific laboratories.

The outcomes of work of professors' and researchers of the PFUR are: 870 copyright certificates, 160 patents of the Russian Federation and 2 scientific inventions, 84 certificates for computer programs and databases (PFUR intellectual rights).

According to international ratings the PFUR is included in the World Top-500 in the QS World University Rankings. In 2011-2014 in the annual National universities proposed assessment by Interfax and Echo of Moscow PFUR ranked 4-6th among all Russian universities the most internationalized university.

III. Introductory remark

Albeit, currently, there is not a generally agreed protocol for assessing the quality of post-obligatory educational degrees in countries other than the evaluating agency's home country, it seems appropriate to employ criteria roughly analogous to those that would apply if the evaluating agency and the evaluated institution were both located in the same country. Therefore, the seven criteria that will be taken into account in this report correspond, with some qualifications and adaptations, to the structure of the manual elaborated to that effect by the Andalusian Agency for University Quality Evaluation and Accreditation (AGAE / DEVA). Specifically, we relied upon the 2016 edition of the "Guide for Renewing the Accreditation of University Bachelor's and Master's Degrees in Andalusia".

For each of these seven criteria, we chose one of four possible ratings, namely:

- “Fully conform”
- “Substantially compliant”
- “Partially compliant”, and
- “Not compliant”.

As applied here, the latter implies very serious shortcomings and might, depending on the criteria in question, originate an unfavorable overall assessment. A rating as “partially compliant” implies shortcomings severe enough to demand a markdown. A “substantially compliant” rating implies a satisfactory situation; however, there may be some, or even considerable, room for improvement. Therefore, whatever the rating chosen for each criterion, we encourage stakeholders to pay close attention to our comments and recommendations.

IV. Overall assessment

Comment: After studying the self-assessment report, a vast range of internal documents, and holding extensive on-site meetings with the program’s administrators, teaching staff, students, graduates and employers, as well as with staff of PFUR’s quality management and general leadership, we appreciate the program’s quality. A high degree of practical-orientation is observed, which provides graduates appropriate skills and knowledge.

Also, we are confident that the program’s administrators and teaching staff, in close cooperation with relevant stakeholders at the University level, are fully committed to the objective of permanently monitoring and improving the program’s quality. The favorable overall rating reflects recognition of past achievements and an expectation of further progress at that respect.

Assessment: FULLY CONFORM

V. Assessment of key quality criteria

CRITERION 1. PUBLIC INFORMATION AVAILABLE

Comment: RUDN website publishes information about their activities, including programs, which is clear, accurate, objective, up-to-date and readily accessible. The students also confirmed this fact during interviews. It could be underlined the admission information, Russian language programs, the life of the University in all the wideness of its aspects, the libraries at faculties in different University buildings, people to which ask information or do a request, as well as the alumni community.

Access to the web site was provided by RUDN University during the visit nevertheless the English version was incomplete. English version of the PFUR website is mostly structured in accordance with the Russian version. Navigation of it was rather difficult, since the main page of the site contained a significant number of links to materials that did not have a high priority for a foreign applicant, student or teacher.

Information about the internal quality assurance system could be expanded. The results of the performance or employment indicators of the graduates could help a better knowledge of the degree by new students. A better position of the program could be achieved against other competing universities. Likewise, it would be advisable to publish plans aimed at improving the program.

Recommendations:

1. The English version of the web site should be improved in order to be clearer and accessible to foreign students.
2. Information on the results of the internal quality assurance system of the program and the improvement plans should be published on the official website.

Assessment: SUBSTANTIALLY COMPLIANT

CRITERION 2. QUALITY ASSURANCE SYSTEM

PFUR has a policy for quality assurance that is part of their strategic management. The quality policy and the internal bodies lead the management of quality assurance were formally established by a Rector's Order on November 3rd, 2010 through the document *Quality assurance regulation on the organization and conducting of educational and work practice of the PFUR students*. More recently, a *Reception and consideration of appeals (complaints, applications, proposals) of students, employees of the University and other citizens to management of PFUR* has been settled by a Rector's Order (18 January 2016).

The internal quality assurance of PFUR is settled in the Document Management of Education Quality System (EQS), which was approved in 2012. The documented procedures deal with the document and data management, internal audits, control of non-conforming product and correcting and preventive actions. Those procedures have written in accordance with the requirements of ISO 9001: 2008. PFUR Organization structure is also established and documented.

The implementation of the EQS procedures is carried out through various fundamental activities according to the (1) the development of the training program (2) the collection data and opinions on the development and results of the program (3) the analysis of data collected and identification of non-conforming product (4) the elaboration and development of improvement plans and (5) the revision of the fulfilment of the improvement plans.

At the university there is a positive practice of drawing up plans for implementing the Rector's orders on the results of meetings with students. The result of the meeting is a document, which includes following information: the appeal, a list of activities based on it, indicating the responsible persons and terms that is then published on the Russian-language version website in the section "Student / Organization of work with students".

More information on the tools used to solicit input from stakeholders (teachers, students, graduates or employers) would help to improve the transparency of the EQS procedures.

Process, resources, performance or employment indicators are the main visible products of the EQS implementation. Some indicators are collected centrally but quality specialists at the departments collect most of them. Then all indicators are normalized and on the basis of normalized indicators, quality diagrams are constructed for the university as a whole for each core educational unit (CEU) in each direction and specialty. The comparison is also made with the target set annually and with the lower limit established. The presentation of the results through tables and comparative graphs are adequate to show the results of the programs. However, written reflections from the tables and graphs would help to know how deans or department heads and their teams value the results and argue to explain them.

The monitoring of the indicators based on the comparison of facts and annual plans is made. As a result of it, a Plan of improvement activities of the program is written. The improvement plan includes those indicators have not reached the planned values, the measures that should be adopted to correct the gap, the responsible of the measures be executed and the execution period.

Recommendations:

1. Expand EQS 01 to EQS 05 procedures in greater detail so that it is possible to know which instruments are used to collect stakeholder opinion. The procedure of reception and consideration of appeals (complaints, applications, proposals) of students, employees of the University and other citizens to management could be a good example of what we mean.
2. Write the monitoring reports so that they include not only tables and graphs but also explanatory arguments that allow to know how the members of a faculty or department value the indicators.

Assessment: SUBSTANTIALLY COMPLIANT

CRITERION 3. DESIGN, ORGANISATION AND DEVELOPMENT OF THE EDUCATIONAL PROGRAMME

Comment: These aspects were not fully addressed in the original self-assessment document, as a fully detailed organization scheme was not included. It made hard for the panel to correctly differentiate between the Bachelor and Master programs. Moreover, some of interviewed students found it hard to define distinguishes of named programs, in particular magistracy students of the 1st year - a fifth year students of the PFUR. Also, a complete description of the items developed in each discipline was not provided. Once these aspects were solved, the organization, design and schedule of the educational program seem to be consistent and appropriate to achieve the goals of the Master.

The program is consistently organized: Program description and workload education program; have been provided as additional information (“Curriculum Chemistry Fundamental and applied chemistry 2016-2017”) with a complete detail of the disciplines (including practice) contained in each block, the number of the ECTS credits for the Basic part and the Elective part of each Module (Inorganic Chemistry, Organic Chemistry and Physical Chemistry). The competences to achieve in each subject are also indicated with their corresponding Code number. A very detailed description of the competences to be acquired by students was specified in the self-assessment report. There are three types of competences: general culture (GC), general professional competencies (GPC), and professional competencies (PC). Every single competence includes a competence description and the subjects that help the students to acquire those competences. In addition, each competence description includes what the students are going to know and what the students are going to be able to do. Every teaching material includes these competences, so that, students know what skills and learning are going to achieve and how.

The number of students accepted in the program is proportional to the human resources and facilities available. The degree is taught in Russian and the Master Dissertations are written and defended in Russian as well. This fact is somehow contradictory with the issue 1.9 regarding “Language of Instruction” given in self-assessment report and is not compatible with the expected International character of the Master.

It should be noted, that most of the interviewed students were able to conduct a dialogue in English (Spanish, French) including the professional vocabulary concerning their master's study. As we consider, this is to be due to both reasons: high level of teaching a foreign languages in the PFUR and the practical needs of Russian-speaking students to communicate with foreign students studying at the university.

The graduates that were interviewed were pleased with the knowledge acquired in the Master. Foreign students are provided with language program for adaptation. In general the employers interviewed were also satisfied with the students; nevertheless some of them suggested that additional instruction in the field of Asymmetric Synthesis would be desirable.

An interview with representatives of employers showed that they are not intensively involved in the processes of creation and further development of master's program, despite the existence of significant contacts between them and the university.

Recommendations:

1. The knowledge of stereochemistry and stereoselective synthesis should be improved, given which is a fundamental part of Organic Chemistry and is most useful for working in the international labor market focusing pharmaceutical, agrochemical, food, perfume, etc. industries.
2. The Master should have more implication in foreign languages, so the students have the opportunity to receive additional professional competence. For example, this can be achieved by including some chemical disciplines in English in the curriculum, and involvement of English native speaking teachers in the pedagogical process.
3. It is necessary to explain to all students and teachers the difference between aims of the master and the bachelor's programs.
4. It is necessary to create conditions for regular feedback from employers about the content of the program, in particular about the declared competencies, the sufficiency of these competencies for successful professional work at employers' enterprises and recommendations about it's development.

Assessment: SUBSTANTIALLY COMPLIANT

CRITERION 4: TEACHING STAFF

Comment: First of all, we would like to stress that the self-assessment concerning the staff involved in the master was not clear enough however, after our requests, the organizers have provide us enough information to clarify the assignations of the teaching staff. After the interview, the perception of the experts' panel regarding the academic adequacy and expertise of the involved professors was positive. Nevertheless the panel of experts has not received yet information about the academic profiles of the internal and external teachers. It is noted that there is a tendency to underestimate the risk of reducing the quality of education due to adherence to the classical forms of the educational process organization. It is noted that the absolute majority of the teachers of the program are PFUR graduates, that is, they are not representatives of a wide range of various scientific schools.

Moreover, the examination of the CV of the teaching staff involved in the Master program, which we received after request, indicates that the academic and research level ranges from good to excellent. Many of them are authors in international high quality publications.

Recommendations:

1. Due to the fact that the absolute majority of the teachers of the program consists of PFUR graduates, the management of the program should ensure the influence of a wide range of the scientific schools of the country and the world using the following approaches: systematic training of the faculty, including long-term internships; involvement in the program of teachers who are graduates of other universities; attraction of representatives of other scientific schools as invited professors; use of the network form of the educational program.

Assessment: SUBSTANTIALLY COMPLIANT

CRITERION 5. INFRASTRUCTURE, SERVICES AND PROVISION OF RESOURCES

Comment: Infrastructures for teaching seem to be appropriate. The information reported has been checked during the visit. Classrooms are conveniently equipped with modern teaching furniture and technology. We have visited the labs, guided by RUDN staff, and we think that they are convenient for a general basic chemistry. The number of classrooms (different sizes) and labs is in line with the number of students. Nevertheless we also think that for more specialized experiments, technical resources or facilities should be improved by incorporating techniques and equipment like standard glassware equipment such as

distillers for dry solvents vacuum lines, gloves boxes, safety cabinets for volatile solvents of common use in organic chemistry and for chemicals.

From a safety point of view, availability of standard devices such as showers, eye wash emergency showers, etc. should be clearly shown. In this context we suggest that safety evacuation plans, behavior in emergencies and procedures should be implemented and have the students to be familiar with.

Room classes are adequate and new technologies are appropriate.

Analytical chemistry techniques such as: X-RAY, GC-MS and LC-MS, FTIR, elemental analyses etc. are also available. Other more sophisticated instrumentation is available either located in campus buildings or in institutions that collaborate with RUDN (NMR, synchrotron...).

Experts noted that for preparation course and master's studies, students often use the material base of partner organizations, even with the necessary equipment at the disposal of the university. The teaching staff confirms this fact. It is possible due to high level of cooperation between the Peoples Friendship University of Russia and its partners and in certain cases as well as conducting research directly at the internship venue, which is more convenient for students.

Convenient library services are provided to students. The RUDN library provides physical and online access to textbooks and specialized literature, as well as databases necessary to carry out current modern scientific research. It is remarkable the effort to provide electronic library services. The panel of experts was able to check that there is easy access to electronic library, by using “*Reaxys*” of *Elsevier Ed.*, which provides information to relevant chemistry literature and data for chemistry research, chemical and pharmaceutical discovery and scientific education.

The RUDN staff has provided information about the bibliography (theoretical and exercises books) used for teaching in the Organic Chemistry field. The more updated ones are in Russian. The English books provided are between the years 1973 – 2000.

Recommendations:

1. The bibliography and textbooks in English should be updated. If necessary, the panel of experts can provide information about this matter.
2. We recommend to improve the access of students to standard facilities i.e. NMR, MS, etc. as a part of their training.
3. An urgent upgrade of safety devices, measures and signs as commented above is strongly recommended.

Assessment: PARTIALLY COMPLIANT

CRITERION 6. LEARNING OUTCOMES

Comment: The study program and the support given to the students allow them to achieve the learning outcomes expected. This general impression has been confirmed by the interview with graduated students and employers. Most of them feel satisfied with knowledge, experimental training and soft competencies acquired by students.

From the documents submitted in the self-assessment report the distribution of the student on the independent Master work is not clear, neither the assignments of the teaching staff.

Access to Master Dissertations and bibliography was provided by RUDN University during the visit.

Information on Basic Literature Organic Chemistry has been provided.

The students have the possibility to present their Master work in Workshops and International Meetings as shown by the PFUR staff during the visit. The workshops are integrated into the educational process of the graduates of the PFUR.

In general, graduates think that there has been enough training at the University to obtain the skills and knowledge that allow them to work in the fields of Material Sciences and Petrol-chemistry at the time of graduation, and in some cases, before finishing the degree. Most employers conveyed that they were satisfied with students of this university for the training and skills they acquired, nevertheless we detected that additional instruction in the field of Asymmetric Synthesis would be desirable.

Students confirm the information on using of the rating system and the academic student rating. This mechanism helps students to orientate in the current level of training quality and proves to be an incentive for self-development.

The panel of experts did not receive clear information about the evaluation methodologies used, if they are mainly based on continuous assessment by interaction during the classes (practices, debates, individual and team works and presentations made by students, etc.) or on a final exam. This circumstance also reveals the lack of teachers' self-reflection in the issue about the organization of the evaluation, as they do not fully identify continuous assessment that they indeed perform.

According to the self-assessment report the percentage of students dropout is increasing over the last three years, but the reasons that forced to a limited number of students to abandon the program do not seem to be understood. Also, although the degree of employment for post-graduates is high, a full analysis of job-seeker success is not available.

Famous Russian scientists - representatives of other educational and research organizations take part in assessment of graduates, which confirm the independency and adequacy of assessing process.

Recommendations:

1. An improvement in foreign languages is desirable. Besides Russian, some subjects or at least a part of them, should be given in English.
2. The final report of the Master Dissertations should have some part in English: Introduction, experimental part, discussions, etc. Modify the criterion to confer the mark of "excellence".
3. Qualification of teachers should also be increased in the field of using modern technologies for organizing the educational process.

Assessment: SUBSTANTIALLY COMPLIANT

CRITERION 7. SATISFACTION INDICATORS AND PERFORMANCE

Students and graduates opinions about the Master's Degree are positive about most of the teaching and facilities provided by RUDN collected by surveys and interviews during the visit.

According to the self-assessment report, one of the criteria of "excellent" mark for master's thesis is at least two scientific publications on the research topic made by the students. Teachers and students confirm that this is a requirement of the top-management of the university and it is aimed to raise the scientific level of master's studies. At the same time, PFUR teachers noted that in some cases student faced with lack of time for publishing procedure. Experts note that in many special scientific journals the publication period of the materials sent by the authors is quite long. In some cases student having a high-level work but as the publication was in process of publishing they did not get an excellent mark. A student who has worked on a thesis for two years and who has received significant scientific results during the last semester, risks not getting the highest evaluation on defence.

Recommendations:

We suggest to think about the changing the criteria to grade the excellence in the qualification. For example, the acceptance by the journal of a paper for publication should be sufficient for getting the "excellent" mark.

1. **Assessment:** FULLY CONFORM