

The External Evaluation Report of a Doctoral Study Domain

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I. Introduction¹

In this chapter, the following shall be summarized:

- the context in which this external evaluation report was drafted (**the type of evaluation, the period of the evaluation visit, the composition of the Experts Committee** etc.);
- details about the doctoral school(s) of which the doctoral domain under review is part (number of doctoral advisors, number of students, institutional context, short history etc.);
- details about the doctoral study domain under review (number of students, institutional context, short history etc.).

The evaluation was carried out for the Electrical Engineering doctoral domain from 14.6.-25.6.2021. The panel members were prof.dr.ing. Radu OLARU, prof. Kruno MILIČEVIĆ and student member Alexandru Mihai CHIUDA.

Introduction according to the self-assessment document:

The Institution Organizing Doctoral Studies, of which the Doctoral School of Applied and Engineering Sciences is a part of, operates within the University "Ștefan cel Mare" Suceava, which has legal status and is a higher education institution. The history of higher education began in Suceava with the establishment of the 3-year Pedagogical Institute by the Decision of the Council of Ministers No 680/3 from September 1963. In 1977, by the Decree of the Council of State no. 209/12.07.1977, the 3-year Pedagogical Institute was transformed into the Institute of Higher Education with the fields of Mechanics (Machine Building), Food Technology and Chemistry and Fishery Technology, Philology, History, Physical Education, day and evening courses, Annex II.00.

The status of university is enshrined by the Government Decision No 225 from 7 March 1990, Annex II.01, and it is the continuation of the cultural and educational traditions of Bucovina, whose beginning is represented by the state schools of the first capitals of Moldova, the Academy of Putna, the Theological Institute and University of Chernivtsi, the Faculty of Forestry in Câmpulung Moldovenesc and the 3-year Pedagogical Institute in Suceava, founded in 1963. In more than five decades of existence, depending

¹ Each time when applicable the information shall be presented gender-wise.



on its form of organization, content, structure, objectives, purpose and mission, four stages can be distinguished, which the Suceava university educational institution has gone through:

1. 1963 -1975: the Pedagogical Institute stage,
2. 1976 -1984: the Institute of Mixed Higher Education, pedagogical and technical stage,
3. 1984 - 1989: the Institute of Sub-engineers stage,
4. from 1990 to the present: the "Ștefan cel Mare" University of Suceava (USV) stage.

The dynamism and importance of the University "Ștefan cel Mare" (USV) were confirmed in 2008 by the evaluation carried out by the National Authority for Scientific Research (ANCS) when the university was accredited as a research and development institution, being part of the research and development system of national interest, in accordance with GD 551/2007 Annex no. 1 to the ANCS Decision no. 9696/14.07.2008. Also, in 2010, in order to facilitate the alignment of the institution's management system with the norms and good practices existing in the European Higher Education Area, the European University Association (EUA) institutionally evaluated USV. The results of the external evaluation can be found at: https://www.iep-qaa.org/downloads/publications/iep_stefan_cel_mare_final_report.pdf. Following the external institutional evaluation, the Romanian Agency for Quality Assurance in Higher Education has reconfirmed in 2019, the rating "HIGH CONFIDENCE GRADE", <https://usv.ro/wp-content/uploads/2019/12/Certificat-ARACIS-1024x717.jpg>, the highest rating a university can receive in the national education system.

Regarding the organization of the doctorate at the University Ștefan cel Mare Suceava, in 1990 prof. dr. eng. E.N. Diaconescu received approval to conduct doctoral activity in the field of Mechanical Engineering, which was reconfirmed in 1993 (by Ministerial Order no. 4794/16.04.1993). IOSUD-USV was established in 2005 within the institution of higher education Ștefan cel Mare University of Suceava by a Senate Decision and operates within it without entering into partnerships that could lead to the creation of a new legal entity. Since 2012, based on the USV Senate Decision no. 68 of 15.05.2012, there were established two Doctoral Schools:

1. Doctoral School of Applied Sciences and Engineering (SDSAI),
2. Doctoral School of Socio-Human Sciences (SDSSU).

II. Methods used

This chapter will contain the methods and tools used in the external evaluation process, before and during the evaluation visit, including at least:

- The analysis of the internal evaluation report of the doctoral study domain under review and its Annexes;
- The analysis of documents made available by the IOSUD, in physical format, during the evaluation visit (if such documents have been requested);
- The analysis of documents, data and information available on the IOSUD/Doctoral School(s) website, in electronic format;
- Visiting the buildings included in the institution's property, comprising (indicative and non-exhaustive list, which shall be changed according to the context):
 - classrooms;
 - laboratories;
 - the institution's library;
 - research centers;



- the Career Counselling and Guidance Center;
- lecture halls for students;
- the student residences;
- the student cafeteria;
- sports ground etc.;
- Meeting/discussions with doctoral students in the doctoral study domain under review;
- Meeting/Discussions with the graduates of the doctoral study domain under review;
- Meeting/Discussions with employers of the graduates in the doctoral study domain under review;
- Meeting/Discussions with the school officials of the Doctoral School(s) in which the doctoral study domain under review is operating;
- Meeting/Discussions with the doctoral advisors in the doctoral study domain under review;
- Meeting/discussions with the representatives of the various structures of the IOSUD/Doctoral School(s) in which the doctoral study domain under review is operating:
 - The Council of the Doctoral School, the University Senate, the Board of Directors, the Quality Assessment and Assurance Commission, the Quality Assurance Department, the Ethics Commission (including with the student representatives of these structures);
 - the Career Counselling and Guidance Center;
 - student organizations;
 - secretariats;
 - various departments/administrative offices (Social/Student residences-Cafeterias etc.);
- Application of questionnaires to doctoral students or academic staff in the doctoral study domain under review.

The methods and tools used in the external evaluation process included:

- The analysis of the internal evaluation report of the doctoral study domain under review and its Annexes;
- The analysis of documents, data and information available on the IOSUD/Doctoral School(s) website, in electronic format;
- Online preliminary meeting for the preparation and harmonization of evaluation steps, in hybrid mode, of doctoral study domains and IOSUD;
- Online meeting with representatives of the institution and of the Council for Academic Doctoral Studies (CSUD);
- Online meeting with the contact person for the doctoral study domain under review and the team who drafted the internal evaluation report;
- Online meeting with Doctoral Schools Council (CSD members);
- Online meeting with PhD students;
- Online meeting with the academic staff corresponding to the doctoral study domain;
- Online meeting with the members of the Ethics Commission;
- Online meeting with the Directors/ persons in charge of the research centers/laboratories within the doctoral study domain;
- Online meeting with employers of Doctoral graduates in the domain;
- Online meeting with graduates for the respective doctoral study domain;
- Internal domain evaluation panel meetings;



III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

**general description of domain analysis.*

Criterion A.1. The administrative, managerial institutional structures and the financial resources

**general description of the criterion analysis.*

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

**general description of the standard analysis.*

Performance Indicator A.1.1.1. *The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:*

(a) the internal regulations of the Doctoral School;

(b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;

c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);

d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;

e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;

f) the contract for doctoral studies;

g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies. It has provided as annexes of self-assessment document all needed documents:

a) Doctoral school regulations – Annex II.03, Annex II.04

b) Methodology for conducting the elections for the position of director of the Doctoral School Council (CSD), as well as the election by the students of the representative in the CSD and evidence of their development– Annex II.03, Annexes II.05-10

c) Methodologies for organizing and conducting the doctoral studies (admission of doctoral students, completion of doctoral studies) - Annex II.1, Annex II.12, various documents listed in Table II.1 from the self-assessment document

d) The existence of mechanisms for the recognition of the quality of doctoral supervisor and for the equivalence of doctorates obtained in other countries - Annexes II.13-15

e) Functional management structures (Doctoral School Council), also proving the regularity of convening meetings – Annexes II.5, Annexes II.7, Annexes II.9, Annexes II.10, Annexes II.16

The meetings did not raise any doubts about effective functioning mechanisms.

f) Doctoral university studies contract - Annexes II.17

g) Internal procedures for analysis and approval of proposals on the subject of the training program based on advanced university studies - Annexes II.03, Annexes II.54, internal procedure PO01 Elaboration, revision and approval of curricula posted on the USV website at:

https://usv.ro/calitate/pagini/proceduri/proceduri_generale/PO%2001%20Procedura%20Elaborarea%20si%20aprobarea%20PI_13.06.2017_semnat.pdf

Recommendations: None

The indicator is fulfilled

Performance Indicator A.1.1.2. The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The SDSAI Doctoral School Regulations, Annex II.04, includes and establishes a series of mandatory criteria, procedures and standards provided in the Code of Doctoral Studies H.G. 681/2011.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

**general description of the standard analysis.*

Performance Indicator A.1.2.1. The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The IOSUD-USV records doctoral students using two IT platforms adapted to USV requirements:

- for admission, <https://admitere.usv.ro/> (Annex II.18)



- and for keeping track of the academic status of doctoral studies, <https://sites.google.com/usm.ro/vpn> (Annex II.19)

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator A.1.2.2. The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The University "Ștefan cel Mare" of Suceava has purchased TURNITIN, Annex II.20. All PhD students' theses are checked through the program's similarity identification filters. As a rule, TURNITIN also checks books, reports and scientific papers written by PhD students.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

**general description of the standard analysis.*

Performance Indicator A.1.3.1. Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Following research projects were listed as under implementation at the time of submission of the internal evaluation file:

- PN-III-P1-1.2- PCCDI31PCCDI / 2018 - Holistic impact of renewable energy sources on the environment and climate HORESEC (PhD students: Dumitru Cernușcă, Ovidiu Țanța, Mihai Cenușă)

- Universities and employers together. An integrated system of innovative educational programs, Project code: 121030 - POCU / 320/6/21/121030 (PhD students: Mihaela Poienar, Oana Grosu, Eusebiu Toader)

Upon additional request, the doctoral school sent an updated project list, confirming that the indicator is fulfilled.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled

*Performance Indicator *A.1.3.2. The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Annex II.A132 presents the evolution over the last five years of the number of doctoral students who have benefited from enrollment in research or institutional development / human resources grants is 29.13%, thus being higher than 20%, and for the field of Electrical Engineering the average percentage is 35.38%.

Although there are some significant individuals positive examples, the cooperation with the industry within the research should be improved, which could result in increased funding by the companies and the tuition fees for their own employers.

The meetings did not raise any additional doubts about the indicator.

Recommendations: The cooperation with the industry within the research should be improved, which could result in increased funding by the companies and the tuition fees for their own employers.

The indicator is fulfilled.

*Performance Indicator *A.1.3.3.² At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

² The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.



- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The data provided indicate that an average of 19% (according to Annex II.A.133) of the total amounts related to doctoral grants obtained by the university through institutional contract and tuition fees collected from doctoral students in the form of paid education are used to reimburse the training expenses of doctoral students (participation in conferences, summer schools, courses, internships abroad, publication of specialized articles or other specific forms of dissemination, etc.).

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Criterion A.2. Research infrastructure

**general description of the criterion analysis.*

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

**general description of the standard analysis.*

Performance Indicator A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The situation of the teaching and research premises of the USV can be found in Annex I.38. The annex Annex I.39 shows the situation of the assets and the teaching premises that are in own property.

Doctoral supervisors as well as doctoral students have access to the research rooms under the procedure PO-SD-11 Ensuring access to research resources for members of doctoral schools, Annex II.22.

PhD students in the field of Electrical Engineering have at their disposal dedicated, high-performance laboratories, specific to the research activities carried out, Annex II.A.211.

The databases to which PhD supervisors and PhD students have access can be accessed on the USV Library website: <https://biblioteca.usv.ro/>, <http://exlibris.usv.ro:8991/F> - ALEPH online catalogue, http://www.biblioteca.usv.ro/documente/abonamente/abonamente_romanesti_si_straine,2013.pdf -

Library subscriptions. According to Annex II.29 the library has open access to several databases databases acquired within the Anelis Plus Project: Springerlink, Web of Science, ProQuest Central, Oxford Journals, IEEE/IEL, Science Direct Journals.



In general, the meetings:

- Online meeting with PhD students;
 - Online meeting with the Directors/ persons in charge of the research centers/laboratories within the doctoral study domain;
 - Online meeting with employers of Doctoral graduates in the domain;
 - Online meeting with graduates for the respective doctoral study domain;
- have confirmed the satisfaction with the equipment and the resources in general.

Recommendations: None

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

**general description of the criterion analysis.*

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

**general description of the standard analysis.*

Performance Indicator A.3.1.1. *Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Three doctoral thesis advisors meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU):

- Prof. Dr. Eng. Laurențiu Dan Milici - Annex II.A.311.1

- Prof. Dr. Eng. Radu Dumitru Pentiuc - Annex II.A.311.2

- Assoc. Prof. Dr. Eng. Octavian Adrian Postolache - Annex II.A.311.3

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *A.3.1.2. *At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself



- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Out of 3 PhD supervisors, 2 are holders of IOSUD (they have a full-time employment contract for an indefinite period at the coordinating higher education institution of IOSUD) and one (associate professor dr. Eng. Octavian Adrian Postolache) holds the University Institute of Lisbon. The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator A.3.1.3. *The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Table II.5 in the self-assessment document gives the number of tenured and non-tenured IOSUD staff delivering teaching activities to the beneficiaries of the PhD programmes. From the data obtained, it can be seen that over the last five years a percentage of 84.06% of the holders who deliver teaching activities to doctoral students from SDSAI was obtained.

In the field of Electrical Engineering, the teaching staff is with proven expertise in the field of the study subjects they teach:

Mandatory subjects

- Research methodology, head of Prof. Dr. Eng. L. Dan Milici (PhD supervisor)
- Ethics and academic integrity, holder of Prof. Dr. Bogdan Popoveniuc (PhD supervisor)
- Process monitoring and data processing, Prof. Dr. Eng. L. Dan Milici (PhD supervisor)

Optional subjects

- Programmable controllers and virtual instrumentation, associate professor Cezar Dumitru Popa, PhD (meets standards)
- Static converters, associate professor Mihai Rață, PhD (meets standards)
- Electrical installations and intelligent home automation, Prof. Dr. Eng. Radu Dumitru Pentiuc (PhD supervisor)
- Modeling and simulation environments, associate professor Mariana Milici, PhD (meets standards)
- Unconventional electric machines and actuators, Prof. Dr. Eng. L. Dan Milici (PhD supervisor)

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *A.3.1.4. *The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs³ does not exceed 20%.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

A detailed situation of the number of doctoral students supervised by each PhD supervisor is presented in Annex II.35. From the annex, there are no cases in which a PhD supervisor handles more than 8 PhD students simultaneously during the period of their PhD studies. Furthermore, there are no cases where a PhD supervisor oversees more than 12 PhD students in total.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Standard A.3.2. *The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.*

**general description of the standard analysis.*

Performance Indicator A.3.2.1. *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

³ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.



- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

PhD supervisors have at least 5 Web of Science indexed publications in impact factor journals, Annex II.A.321. They also have numerous national and international patents. Still, as it was also mentioned at the meetings, the benefit of the patents is unclear due to the lack of legal framework for commercialization, e.g. through spin-offs. Thus it is recommended to resolve possible legal issues (at the level of the University and at the national level if needed) regarding the commercial utilization of the patents.

The mentioned doctoral supervisors have international visibility in the last 5 years demonstrating: as a member of the boards of international professional associations, the quality of guest at conferences or groups of experts held abroad or the quality of a member of thesis commissions. doctorate at foreign universities or in co-supervision with a foreign university, laureates of international invention salons (Annex II.A.311.1, Annex II.A.311.2 and Annex II.A.311.3). However, the low citation numbers (data provided upon an additional request by the reviewer) shows that it is needed to raise visibility of the research, e.g. through improved international cooperation. For example, the highest citation numbers has dr. eng. Octavian POSTOLACHE, affiliated with University Institute of Lisbon, which confirms the necessity for stronger international cooperation in general.

The meetings did not raise any additional doubts about the indicator.

Recommendations:

Resolve possible legal issues (at the level of the University and at the national level if needed) regarding the commercial utilization of the patents.

Define measures to raise the international visibility of the research, e.g. through improving international cooperation. Thereby, as already mentioned, it is needed to re-think the role and purpose of the patents because they, of course, consume a lot of time but have no significant international visibility, and there is, at the moment, no possibility for commercialization.

The indicator is fulfilled.

Performance Indicator *A.3.2.2. *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

According to Annex II.A.322

- dr. eng. Laurențiu Dan Milici obtained in the period 2016-2020 the score 1581.85 (minimum standard score 600),

- dr. eng. Radu Dumitru Pentiu obtained in the period 2016-2020 the score 1167 (minimum standard score 600),

- dr. Eng. Octavian Postolache obtained in the period 2016-2020 the score 809 (minimum standard score 600).

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

**general description of domain analysis.*

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

**general description of the criterion analysis.*

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

**general description of the standard analysis.*

Performance Indicator *B.1.1.1. *The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Criterion B.1.1.1. is fulfilled according to Annex II.B.111 (upon additional request, the coordinator has also sent the English translation of the document). However, the numbers of candidates are relatively low; thus it is hard to make a conclusion on a sample that is not statistically significant.

Recommendations:

Due to the low total number of candidates, please pay attention to this indicator in the years to come.



The indicator is fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

**general description of the standard analysis.*

Performance Indicator *B.1.2.1. *Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Admission is organized based on a set of documents Annex II.36, which include R10-Regulations for admission posted annually on the IOSUD website, selection and admission procedures for PhD, methodology and specific criteria, standards specified in the admission procedures.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator B.1.2.2. *The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission⁴ does not exceed 30%.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Criterion B.1.2.2. is fulfilled according to Annex II.B.122.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

**general description of the criterion analysis.*

⁴ 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.



Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

**general description of the standard analysis.*

Performance Indicator B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The training programme based on advanced undergraduate studies totals 30 credits in each doctoral field, with a minimum of three disciplines being studied in each of the fields, each with a high degree of relevance for the good preparation of doctoral students. According to Annex II.48, each doctoral field has a discipline devoted to research methodology or statistical data processing - in the case of Electrical Engineering:

- Research methodology, head of Prof. Dr. Eng. L. Dan Milici
- Process monitoring and data processing, Prof. Dr. Eng. L. Dan Milici

Furthermore, during the meetings the teachers have recognized the inevitability of the concept Industry 4.0/5.0., and they are already taking the steps in that direction, which is praiseworthy for sure.

However, within the "Research methodology" or, more appropriate, as additional workshops, it is needed to acquaint students with the procedures of writing project proposals for the most usual grants. Namely, during the meeting, the students said that they are not included in this type of activities, which of course is not the most essential aspect of their research career, but still it should not be neglected totally as well.

The meetings did not raise any additional doubts about the indicator.

Recommendations:

Acquaint students with the procedures of writing project proposals for the most usual grants.

The indicator is fulfilled.

Performance Indicator B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

As shown in Annex II.48, from the academic year 2018-2019 onwards, a common discipline has been introduced for all doctoral fields in IOSUD-USV called Ethics and Academic Integrity, holder of Prof. Dr. Bogdan Popoveniuc.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities⁵.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

For each subject in the advanced training plan, a discipline sheet is prepared, Annex II.81, which describes how the doctoral student is provided with the necessary competences and how to achieve the skills and attitudes required for research. A feedback on the content and competences offered by the discipline sheets is obtained using the PhD students' satisfaction survey, Annex II.82, the data being then processed and analysed.

Upon additional request by the evaluator, it was clarified that the questionnaire results become public only if more than 50% of the students who completed the questionnaire are exceeded and that this percentage has not been reached in recent years. So there is the feedback mechanism, but it is up to the students if they use it.

The meetings did not raise any additional doubts about the indicator.

Recommendations:

Define the measures to motivate students to complete the questionnaires, i.e. to reach a significant percentage.

The indicator is partially fulfilled.

⁵ Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.



Performance Indicator B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

As confirmed during the meetings, the research topic is also discussed with the student at the beginning, which is a good start for a mutually respectful relationship.

The appointment of the members of the steering commissions is defined by Annex II.32.

Periodically, regular meetings and workshops are initiated for doctoral students within the events organized by the University. During these discussions, the opportunity to develop new study directions is evaluated, as well as the needs of doctoral students and their general level of satisfaction with the doctoral study program in order to continuously improve the academic and administrative processes. A doctoral student has the opportunity to participate on average once every two months in such meetings and discussions (Anunțuri Doctorat, ELSTUD, ICE USV).

Upon additional request by the evaluator, the Doctoral school has provided some examples for the written guidance/feedback.

In the meetings with the students, it seems that they have an excellent and respectful relationship with their supervisors. They feel that they have support from the Doctoral School and University, i.e. they have multiple addresses to contact in case of any problems. However, they did not know what an "official procedure" would be if they had any conflicts with the supervisor. In my opinion, this is important although there was no real need for it until now.

Furthermore, from the meetings with the students and alumni, it is clear that the three years are generally too short to finish the PhD study on a qualitatively high level, especially in electrical engineering where it is needed to organize and conduct often complicated experiments. This is also a problem for attracting the PhD students from the industry, because they have additional workload at their work places outside the University.

The meetings did not raise any additional doubts about the indicator.

Recommendations:

Acquaint students with the "official procedure" if they would have any conflicts with the supervisor.

Discuss and try to resolve the problem, at the University and/or national level, of too short PhD deadline (three years), which is a problem in general, but especially for attracting the PhD students from the industry, because they have significant additional workload at their workplaces outside the University.

The indicator is fulfilled.

Performance Indicator B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.



- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself
- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Criterion B.2.1.5. is fulfilled according to Annex II.B.215, which shows that there are 10 doctoral students during their doctoral studies and 7 persons (teachers / researchers) involved in their guidance in the field of electrical engineering.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

**general description of the criterion analysis.*

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

**general description of the standard analysis.*

Performance Indicator B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The papers of the students who obtained the doctoral degree proposed for the commission analysis can be found in Annex II.B.311. Here are randomly selected papers:

- Research on the Realization of a Electromechanical Pressure Micropump Used in Electrical Equipment Dumitru CERNUȘCĂ, Dan Laurențiu MILICI, Radu Dumitru PENTIUC, Cezar POPA, Vasile Eusebiu TOADER

The experimental part of the paper, i.e. the prototype and the presented analysis, can be considered a significant original contribution in the respective domain. Furthermore, it opens possibilities for further research.

- LabVIEW Application for the Clock Hour Number Transformation Diagram, Mihaela POIENAR; Dan Laurentiu MILICI; Ovidiu Magdin ANA; Elena Daniela OLARIU



The paper presents a software application and a nice interface for utilizing the clock hour number transformation diagram for the three-phase transformers. Although the described application can be helpful in research in general, the presented paper itself does not contain any significant original contribution.

- Automatically Prevention of Accidentally Maintenance System; Sergiu Dan Pata, Mihaela Poienar, Dumitru Cernusca, Dan Laurentiu Milici

The system proposed in the paper monitors for all components on the machines and it will alarm the maintenance team if one component can have a failure until the next stop of the machine. Thus, one can find all the information that can sustain the idea of an automatically accidentally prevention system to be used in the industry. However, there is no proof of concept; thus, the paper does not contain any significant original contribution.

- Considerations Regarding the Practical Implementation of the Heliothermic Actuator in the Form of Flat Spiral Spring; Adrian Neculai Romanescu, Dumitru Cernușcă, Mihaela Poienar, Dan Laurențiu Milici

This paper presents an actuator with bimetallic band in the form of a flat spiral spring and heat conductive fins. The end of the paper presents the main conclusions regarding the tests made on the actuator with the bimetallic band immersed in various mediums, which can be considered a significant original contribution and basis for further research.

- LabVIEW Software Application for Monitoring the Emotional States; Mihai Cenușă, Mihaela Poienar, Laurențiu-Dan Milici

This paper presents a software solution developed in LabVIEW for monitoring the emotional states of people who work on the computer, based on skin resistance. The program determines main statistical indicators, based on which the level of the user's emotional state is determined and, also, the user can be alarmed when a certain value is surpassed. The experimental part can be considered as a significant original contribution and basis for further research.

Recommendations: None.

The indicator is fulfilled.

Performance Indicator *B.3.1.2. *The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.*

- *description of the facts, the findings from the assessed institution's documents and the evaluation visit itself*

- *analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself*

The list of students' participation in prestigious international events is presented in Annex II.B.312, the ratio being $33:6 = 5.5 / 1$. The meetings did not raise any doubts about the indicator, i.e. students have emphasized that they have all needed support from the Doctoral school and the University.

Recommendations: None

The indicator is fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

**general description of the standard analysis.*

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

According to the Annex II.B.321, i.e. the commissions appointed for the defense of doctoral theses during the last 5 years, the indicator is fulfilled. The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

In Annex II.B.321 are presented the commissions appointed for the defense of doctoral theses during the last 5 years in the field of electrical engineering. In the last 5 years, 10 doctoral theses in the field of electrical engineering have not been defended. Thus, this indicator is not analyzed.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is not analyzed (less than 10 doctoral thesis).



Domain C. QUALITY MANAGEMENT

**general description of domain analysis.*

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

**general description of the criterion analysis.*

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

**general description of the standard analysis.*

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

(a) the scientific work of Doctoral advisors;

(b) the infrastructure and logistics necessary to carry out the research activity;

(c) the procedures and subsequent rules based on which doctoral studies are organized;

d) the scientific activity of doctoral students;

e) the training program based on advanced academic studies of doctoral students;

f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The CEAC-USV has developed and made known in the University the basic components of the academic quality assurance system, Annex I.54, Annexes I.58-I.69, Annex I.82.

However, through the meetings with the alumni and employers, it seems that their contribution is based mainly on personal contact, i.e. there is no "official" functioning feedback mechanism, e.g. for the research plan, the content of PhD study programs, etc. Their deeper involvement could help boost the research with even more practical topics and attract more investment from the industry, i.e. more candidates employed in the companies. Furthermore, through constant cooperation with the industry, the patents could be more easily commercialized.

The meetings did not raise any doubts about the indicator.

Recommendations:

Include alumni and companies more into the feedback mechanisms on a more official/systematic way.

The indicator is fulfilled.



Performance Indicator *C.1.1.2. Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

There is a Questionnaire for evaluation by doctoral students of the doctoral school activity, Annex II.75. Additionally are held regular meetings and workshops for doctoral students within the events organized by the University (Doctoral student of the year - 9th edition, Session of scientific communications of EISTud students - 14 editions, discussions with the industrial and business environment) or subsequent defense of doctoral theses or research reports (in which case they participate in addition to doctoral supervisors and members of the guidance committee).

Based on the QA mechanisms, the most significant measures taken are (list provided upon additional request by the evaluator):

- modification of the curriculum by introducing, two years ago, an optional discipline requested by doctoral students (Electrical installations and intelligent home automation),

- adapting the program and the way of carrying out of the didactic activities and the evaluation within the disciplines from the curriculum by focusing and particularizing them on the topic of each doctoral student

- the financing by the University of the participation of doctoral students in national and international invention fairs, to get in touch with inventors and to get acquainted with the level of innovation and protection of intellectual property in their field of research.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

**general description of the criterion analysis.*

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

**general description of the standard analysis.*

Performance Indicator C.2.1.1. The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:

(a) the Doctoral School regulation;

(b) the admission regulation;

(c) the doctoral studies contract;



(d) the study completion regulation including the procedure for the public presentation of the thesis;

(e) the content of training program based on advanced academic studies;

(f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;

(g) the list of doctoral students within the domain with necessary information (year of registration; advisor);

(h) information on the standards for developing the doctoral thesis;

(i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The IOSUD publishes all relevant information on the website of the organizing institution, in compliance with the general regulations on data protection, as described in detail in the self-assessment document. The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

**general description of the standard analysis.*

Performance Indicator C.2.2.1. All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The USV Library offers through the Anelis Plus Project access to international scientific databases in different fields of knowledge, and periodically to other databases from the consortium list. The databases and other bibliographical sources to which PhD students and supervisors have access can be accessed on the USV library websites: <http://www.biblioteca.usv.ro/>, <http://exlibris.usv.ro:8991/F> - ALEPH online catalogue. According to the contract, Annex II.70, the library has open access to various scientific associations and databases. Based on the number of accesses 20.395, according to (Annex I.40 page 42) Library Activity Report for 2020, proof of the international databases is provided.



The wide access was confirmed also by the Doctoral school upon additional request by the evaluator, through a sent list (and three additional attachments):

- The first file contains 2376 magazines that are part of the ELSEVIER Freedom Collection to which they have full access.

- The second file annex contains the list of the 460 IEEE (Institute of Electrical and Electronics Engineering) journals to which they have full access.

- The third annex contains the list of the 30,000 volumes of IEEE conferences to which they have direct access (representing over 1200+ conferences published under the auspices of IEEE). They also have access to 2400 approved and published IEEE standards.

- The link below contains the list of SpringerLink journals to which they have access <https://link.springer.com/search?facet-content-type=%22Journal%22>

- Web of Science and Scopus represent international databases. They use them to identify the necessary bibliographic resources, scientometric analyzes and access to abstracts of papers from over 34,888 journals, books, conference volumes and patents, respectively 18,500 journals (Scopus).

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator C.2.2.2. Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.

- *description of the facts, the findings from the assessed institution's documents and the evaluation visit itself*

- *analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself*

USV has purchased TURNITIN, the proof of contracting it can be found in Annex II.20 and of its use in Annex II.71. As part of the measures to increase the quality of theses and to avoid intellectual fraud, it was decided by the Senate that all theses, articles and projects of PhD students should be checked through the filters of the TURNITIN similarity identification program. The reports issued by the software after checking scientific papers for similarity are analysed by PhD supervisors who decide on the correctness of the use of sources and the design of the papers before publication or submission.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.

- *description of the facts, the findings from the assessed institution's documents and the evaluation visit itself*



- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

Doctoral supervisors usually ensure access for doctoral students to the laboratories of excellence, Annex II.27, or research laboratories, Annex II.28, without discrimination, prohibitions, restrictions on material resources or any other kind. There were no cases in SDSAI where doctoral students complained about the impossibility of using the scientific research laboratories.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Criterion C.3. Internationalization

**general description of the criterion analysis.*

Standard C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

**general description of the standard analysis.*

Performance Indicator *C.3.1.1. *IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The data from Table II.8 in the self-assessment document have been taken from (Annex II.49, criterion 2) and Annex II.75, resulting in an average value of 47.07%, thus fulfilling the criterion that at least 35% of doctoral students have undertaken a training period abroad or another form of mobility such as participation in international scientific conferences.

Upon additional request by the evaluator, it was clarified that the rate of 47.07% is at the level of the entire doctoral school and one student who participated in three mobility activities was counted as one. For the field of Electrical Engineering each doctoral student has at least 2 international mobilities in the training period (3 years), generally participation in invention salons, conferences or internships in partner universities, so for the Electrical Engineering domain the percentage is 100%. However, from additionally provided data for Electrical Engineering:

Academic year	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
Number of students participant at international conferences and invention salons	4	4	5	5	5	23
Number of student participant in mobility	1	0	0	1	0	2
Number of doctoral students enrolled	6	5	7	6	7	31
Percent of mobilities [%/year]	83.33	80.00	71.43	100.00	71.43	80.64

it seems that the mobility of students is relatively low, e.g. only four in last 5-6 years. Thus it is recommended to motivate students to participate more in mobility programs/projects.

The meetings did not raise any additional doubts about the indicator.

Recommendations:

Motivate students to participate more in mobility programs/projects

The indicator is fulfilled.

Performance Indicator C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The Doctoral School, through IOSUD-USV, allocates the necessary funds for the organisation of doctoral co-supervisorships, Annex II.50. In addition, there is a constant concern to invite internationally recognized experts to give lectures for PhD students, Annex II.C.312.

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

Performance Indicator C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).



- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself

The various measures are listed in Annex II.50, Annex II.75, Annex II.76, Annex II.84

The meetings did not raise any doubts about the indicator.

Recommendations: None

The indicator is fulfilled.

IV. SWOT Analysis

<p>Strengths:</p> <ul style="list-style-type: none"> - good relationship between students and PhD advisors - support by the Doctoral school and the University - well-equipped laboratories, access to scientific journals and literature in general 	<p>Weaknesses:</p> <ul style="list-style-type: none"> - low international visibility of the research - low number of candidates - low students' participation in providing feedback through questionnaires - low student mobility
<p>Opportunities:</p> <ul style="list-style-type: none"> - stronger cooperation with the industry and deeper involvement of alumni and employers in defining research plan and content of PhD study programs - resolve legal issues that are disabling the commercial utilization of the patents 	<p>Threats:</p> <ul style="list-style-type: none"> - too short deadline for finishing the Phd study - high number of patents (and corresponding high amount of consumed time and effort) without clear purpose for the patents, due to the legal issues regarding the commercialization and due to the inherent low international visibility of patents in the international scientific community

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
1.	PI	A.1.1.1. The existence of specific	The indicator	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		<p>regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:</p> <p>a) the internal regulations of the Doctoral School;</p> <p>b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;</p> <p>c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);</p> <p>d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;</p> <p>e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;</p> <p>f) the contract for doctoral studies;</p> <p>g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.</p>	is fulfilled	
2.	PI	A.1.1.2. The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.	The indicator is fulfilled	None
3.	PI	A.1.2.1. The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.	The indicator is fulfilled	None
4.	PI	A.1.2.2. The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.	The indicator is fulfilled	None
5.	IP	A.1.3.1. Existence of at least one research or institutional / human resources	The indicator	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.	is fulfilled	
6.	PI *	A.1.3.2. The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.	The indicator is fulfilled	The cooperation with the industry within the research should be improved, which could result in increased funding by the companies and the tuition fees for their own employers.
7.	PI *	A.1.3.3. At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).	The indicator is fulfilled	None
8.	CPI	A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5	The indicator is fulfilled	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		years will be presented distinctly		
9.	CPI	A.3.1.1. Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.	The indicator is fulfilled	None
10.	PI *	A.3.1.2. At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.	The indicator is fulfilled	None
11.	PI	A.3.1.3. The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.	The indicator is fulfilled	None
12.	PI *	A.3.1.4. The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs does not exceed 20%.	The indicator is fulfilled	None
13.	CPI	A.3.2.1. At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors	The indicator is fulfilled	Resolve possible legal issues (at the level of the University and at the national level if needed) regarding the commercial utilization of the patents. Define measures to raise the international visibility of the

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.		research, e.g. through improving international cooperation. Thereby, as already mentioned, it is needed to re-think the role and purpose of the patents because they, of course, consume a lot of time but have no significant international visibility, and there is, at the moment, no possibility for commercialization.
14.	PI *	A.3.2.2. At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years	The indicator is fulfilled	None
15.	PI *	B.1.1.1. The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.	The indicator is fulfilled	Due to the low total number of candidates, please pay attention to this indicator in the years to come.
16.	PI *	B.1.2.1. Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for	The indicator is fulfilled	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.		
17.	PI	B.1.2.2. The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission does not exceed 30%.	The indicator is fulfilled	None
18.	PI	B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.	The indicator is fulfilled	Acquaint students with the procedures of writing project proposals for the most usual grants.
19.	PI	B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.	The indicator is fulfilled	None
20.	PI	B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes“, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.	The indicator is partially fulfilled	Define the measures to motivate students to complete the questionnaires, i.e. to reach a significant percentage.
21.	PI	B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.	The indicator is fulfilled	Acquaint students with the “official procedure” if they would have any conflicts with the supervisor. Discuss and try to resolve the problem, at the University and/or national level, of too short PhD deadline (three years), which is a problem in general, but especially for attracting the PhD

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
				students from the industry, because they have significant additional workload at their workplaces outside the University.
22.	CPI	B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.	The indicator is fulfilled	None
23.	CPI	B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain	The indicator is fulfilled	None
24.	PI *	B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.	The indicator is fulfilled	None
25.	PI *	B.3.2.1. The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.	The indicator is fulfilled	None
26.	PI *	B.3.2.2. The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the	The indicator is not analyzed (less than	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.	10 doctoral thesis).	
27.	PI	<p>C.1.1.1. The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:</p> <p>a) the scientific work of Doctoral advisors;</p> <p>b) the infrastructure and logistics necessary to carry out the research activity;</p> <p>c) the procedures and subsequent rules based on which doctoral studies are organized;</p> <p>d) the scientific activity of doctoral students;</p> <p>e) the training program based on advanced academic studies of doctoral students;</p> <p>f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.</p>	The indicator is fulfilled	Include alumni and companies more into the feedback mechanisms on a more official/systematic way.
28.	PI *	<p>C.1.1.2. Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.</p>	The indicator is fulfilled	None
29.	CPI	<p>C.2.1.1. The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:</p>	The indicator is fulfilled	None

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		a) the Doctoral School regulation; b) the admission regulation; c) the doctoral studies contract; d) the study completion regulation including the procedure for the public presentation of the thesis; e) the content of training program based on advanced academic studies; f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; g) the list of doctoral students within the domain with necessary information (year of registration; advisor); h) information on the standards for developing the doctoral thesis; i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.		
30.	PI	C.2.2.1. All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.	The indicator is fulfilled	None
31.	PI	C.2.2.2. Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.	The indicator is fulfilled	None
32.	PI	C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.	The indicator is fulfilled	None
33.	PI *	C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the	The indicator is fulfilled	Motivate students to participate more in mobility programs/projects

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.		
34.	PI	C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.	The indicator is fulfilled	None
35.	PI	C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).	The indicator is fulfilled	None

The recommendations contained in the report shall be resumed in the indicators' analysis. Other general recommendations may be made that do not fit within a particular indicator.

VERY IMPORTANT!!! – Each identified weakness must be correlated with at least one recommendation to improve the situation!

VI. Conclusions and general recommendations

Several important issues raised during the evaluation are resumed and some general conclusions are drawn on the quality of the education provided within the doctoral study domain under review; the Experts' Panel also presents general assessments about the institution. Other general recommendation may also be presented, which cannot be related to a specific indicator and have not been presented at point V.

A decision is proposed, together with the reasons for granting it (if the Experts' Panel members do not reach a consensus, each of them can propose and argue his/her own decision).

VII. Annexes

The following types of documents shall be attached:



- *The detailed schedule of the evaluation visit – MANDATORY.*
- *The survey questionnaire applied to doctoral students or academic staff in the doctoral study domain under review, the results - optional (e.g., in graphic form) and their interpretation - if applicable.*
- *Scanned documents – any document requested from the IOSUD during the evaluation visit and received, which is not found in the internal evaluation file received before the visit and referred to in the report.*
- *Pictures – if relevant issues are raised regarding the condition of the student residences, cafeterias, premises for teaching and learning activities, library etc.*
- *Screenshots/Print screens of the Doctoral School/IOSUD website proving specific claims in the report, accompanied by the date when they were accessed and saved.*
- *Any other documents relevant to the evaluation process referred to in the report.*

16.9.2021.