ROMANIAN AGENCY FOR QUALITY ASSURANCE IN HIGHER EDUCATION
Full member of the European Association for Quality Assurance in Higher Education - **ENQA**
Listed in the European Quality Assurance Register for Higher Education - **EQAR**

Annex No. 3

The External Evaluation Report of a Doctoral Study Domain

Contents
I. Introduction
II. Methods used
III. Analysis of performance indicators
IV. SWOT Analysis
V. Overview of judgments awarded and of the recommendations
VI. Conclusions and general recommendations
VII. Annexes

I. Introduction[1]

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.).

I was assigned with the evaluation of the Doctor Training Program at the Applied and Engineering Science in the Computer and Information Technology specialisation, of the Stefan cel Mare University of Suceava (USV). The internal evaluation was carried out using Zoom on-line platform. The meeting took place from the 2nd of September 2021 until 6th of September 2021. The ARACIS President provided to the entire team on the 30th of August the framework of evaluation. Afterwards, there was meeting with the Rectors and Vice Rectors and the Executive team of the University.

The USV consists of ten faculties that are constituted of departments. There is also administrative structure that supports both the teaching and research processes.

The university management was appointed in accordance with the provisions of the Election Methodology, approved by the USV Senate. The approval of candidates for the position of dean is conducted according to the internal methodology, after which the selection process of the deans of the faculties is based on an internal procedure. This information is provided in Annex I.08 in Romanian. The students participate in the decision-making process (proportion of at least 20%), selected according to their methodology and are represented in all management structures. The Doctoral School participates, through the affiliated Doctoral supervisors, in the implementation of research or institutional development / human resources grants in the field of Computer and Information Technology.

After examining the Internal Self-Evaluation Report, the following meeting had been arranged: the Head of the Doctoral Training Program who provided very useful information regarding the Faculty and the training program, current PhD students, PhD graduates and faculty supervisors.

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:

---

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

• 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 analysis is based on the Zoom meeting that took place online with different stakeholders (e.g. Head of the Doctoral Training Program, PhD supervisors, PhD students, PhD graduates and employers). These meetings gave the opportunity to external committee to liaise with the different stakeholders of the University. The evaluation report includes basic information regarding historical information about the Faculty, research mission and objectives, quality of the supervision and research output. The Self-Evaluation report is provided in English. All the Annexes have been provided in Romanian. However, the responsible team of preparing the Self-Evaluation report has provided clarifications to understand the structure of the Doctoral school. More specifically, the following clarifications have been provided by the Faculty:

-Evaluation of the course
-Research infrastructure
-Research Outcome
- Secondments in industry

- Employability opportunities

The regulations, methodologies, procedures and decisions of the Doctoral training in the reporting period are presented on the University's web site: https://ceac.usv.ro/documente-usv/.

The duration of the doctoral program is usually 3 years. The duration of the doctoral program can be extended, with the approval of the University Senate, at the proposal of the PhD supervisor. The training has the following components:

(a) Training program based on advanced university studies within the doctoral school; The doctoral students attend certain courses(modules) related to the PhD specialisation.

b) Individual Scientific Research Program: Each PhD student select a specific research topic. There is a supervisor that mentors him/her and a committee that monitors the progress. Each student must present his/her progress on regular basis in each year.

c) Mobility programs and participation in international events.

The Self-Evaluation report illustrates the number of PhD that have been graduated over the reporting period. It would be interested to have information regarding the average number years spent in the program until PhD graduate.

The University has been engaged in various international events to promote research outcome and link with regional companies so that the students can explore.

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

There is evidence that the Faculty applies broadly accepted metrics (e.g. quantity and quality of publications, journals' quality as well as standard citation indices) in the Doctoral training program. As an effect, the Doctoral program in the is deemed as good. There are few areas where there is space for improvements. It seems that the relatively longer graduation period and difficulties facing the job-hunting efforts of Doctoral students can be only partly attributed to an overloaded schedule of project engagement, and suboptimum career placement efforts.

The School of Applied Sciences and Engineering (SDSAI) carries out research in the following areas (Table II.4):
- Computers and Information Technology,
- Geography
- Electric Engineering
- Material Engineering
- Food Engineering
- Electronic Engineering, Telecommunications, and Information Technology
- Mechanical Engineering
- Industrial Engineering
- Forestry

This is a rather research broad area with overlapping activities (e.g. "Computers and Information Technology" vs Electronic Engineering, Telecommunications, and Information Technology). The University does not have the capacity to support all these activities. In the vast majority of specialisation of areas, there is a limited number (e.g. 2 or 3) of academic staff/supervisors to support the PhD students. Taking into account the current human resources (Table II.6), the number of specialisations should be reduced to 3, so that a critical mass of researcher purse research with success. It is not clear whether inter-disciplinary strategy is carried out among the different fields and whether there are academics that

carry research in more than one field. The school must focus the research activities under the umbrella of Industry 4.0 investment.

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

The University has adopted a holistic approach towards administrative, management and financial planning of different Doctoral training programs.

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.

The Faculty of has provided Annexes in Romanian regarding the Internal regulations of the Doctoral School. This information is also available in the Web site: https://ceac.usv.ro/documente-usv/. The methodology for organizing the elections and appointing the members of the Board for University Doctoral Studies (IOSUD-USV) is also available in Annex II0.3 in Romanian. The IOSUD-USV consists of the following members:
   a) the Director, appointed by competition (Prof.univ.dr.eng. Laura BOURIAUD);
   b) 1 member elected directly by universal, direct, secret and equal vote of the doctoral supervisors from IOSUD-USV (Prof. univ. dr. Elena Brândușa STEICIUC);
   c) 1 doctoral student elected by the doctoral students (Mr Costel CIOBANU)
   d) 4 members of that have been appointed by the rector of USV.

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: The regulation of the Doctoral School is described in the Annexes. The structure of the doctoral schools is found in the first chapter of the Regulations that is in Romanian language. It is not clear whether leadership and conflict management skills are considered in the criteria for the elections of the Director of the 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. The methodology for the election is presented in the Annexes. The Council of Doctoral Studies from IOSUD-USV has been elected by taking into account the Code of Doctoral Studies Art. 14 (2) according to which doctoral supervisors from Doctoral School are part of them up to a maximum of 50%, PhD students in a proportion of at least 20%, the rest being completed with members from outside the Doctoral School.
   c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies). Table II.1 shows the list of functional documents concerning the organization and functioning of IOSUD. There are links to files regarding the organisation of the doctoral studies in Romanian language.
   d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad. After reading the Self-Evaluation report, there is a clear supervisor assigned to each student. The recognition of the quality of doctoral supervisor is made according to OM 5921/06.12.2016, the legislation in force, of the procedure PO-SD-13 as presented in Annex II.13.
   e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings; The PhD activities are carried out under the supervision of IOSUD-USV. The Computer and Information Technology field belongs to the Doctoral School of Applied and Engineering Sciences. The Council of the Doctoral School should meet at least three times a year at the request of the Director of the Doctoral School or at least one third of its members". There is no clear evidence in the Self-Evaluation report whether such meetings have taken place (minutes meetings are missing).

f) the contract for doctoral studies; The contract template is provided in the following link: https://usv.ro/studenti/contracte-studii/. It includes the following information: data about the IOSUD-USV and the doctoral school, PhD student data, the chosen research topic, the monthly amount of the scholarship, the amount of the study fee, the language in which the doctoral thesis will be written, the contract period, the conditions for extending the deadline for completing the doctoral thesis. The engagement in teaching activities has been set at 4-6 conventional hours per week.

g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies. There is procedure regarding the evaluation of the research proposals from the academics as already described in Annex I.62.

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The evaluation has been carried out remotely, however the other members of the committee had the opportunity to meet the team and have access to the facilities.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. There is good procedure regarding the management of the Doctoral program. There is a need for the Faculty to use a workflow system to support transparency (e.g. meeting of the PhD student with the PhD committee).

Recommendations:

The Faculty should make arrangements for candidates with disabilities.
It seems that there is no process regarding the replacement of students/academics that leave the University and have been selected as members of the Council.
The Council should ensure that the members of the Council have got overlapping leadership and technical skills contributing to the strategy and mission of the Doctoral training program

The indicator is fulfilled/~~partially fulfilled/not 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- The doctoral study programme of the Faculty is organized using National education law no.1/2011. The whole information has been provided in Romanian in Annex II.04.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- There is limited information that can be extracted regarding the supervisor allocation, decision-making, changing supervisor, interruption conditions and research ethos and integrity. It seems that this information is provided in Annex II.04.

Recommendations:
-A clearer process is required regarding the allocation and even distribution of students to supervisors.
- It not clear where multi-disciplinary projects are carried out within the School.
- There is a need to establish more systematic collaboration between the Doctoral students and the other researchers within the Faculty.

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

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

The analysis is mainly based on the Internal Self-Evaluation report that it is provided in English. The School has the resources to support the Doctoral training program in the field of Computers and Information Technology.

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. The Faculty has already deployed an IT system (https://admitere.usv.ro/) to administer students in bachelor, master and PhD programs. A separate platform is used to keep track of the academic status of doctoral students.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- There is no evidence of the IT system to support Doctoral Program. The University should utilise these data to assist to improve the programs across all levels.

Recommendations:
There is a need to integrate the progress of the PhD students to the main IT system (https://admitere.usv.ro/)
The IT system should provide statistics and generates tables with graduates of doctoral studies based on which doctoral degrees are issued.
Use of central system to record meetings and the action points between the Supervisor Team and the PhD student
Use of the IT system to support the alumni.

The indicator is fulfilled/~~partially fulfilled/not 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. The University uses the Turnitin software tool that compares the text from the thesis with texts from external databases (of other users of the application). The software may indicate similarities between the verified text and the texts with which it was compared. It seems that a straightforward process in the theses.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. There was no evidence about the similarity index of thesis that have been submitted for evaluation. There is no evidence provided regarding the plagiarism output.

Recommendations:
Use of anonymised samples of PhD theses to train students.
Make clear the penalty imposed in case plagiarism detected.

The indicator is fulfilled/~~partially fulfilled/not 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.

The University has used the European Regional Development Fund (ERDF) "Integrated Research, Development and Innovation Centre for Advanced Materials, Nanotechnology and Distributed Manufacturing and Control Systems" to build 11 research laboratories, equipped with more than 130 research and development equipment. The Rector has made a presentation of the investment with emphasis on the Industry 4.0 infrastructure.

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- Annex II.A131 presents over the last five years of research, institutional development and human resources grants involving PhD supervisors in the field of *Computers and Information Technology*. There are 16 grants that have been secured in the area of *Computers and Information Technology*. All five PhD supervisors have carried out research activities either as director or project manager as well as a member of the implementation teams.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- Both research grants and institutional development grants have been shown that the Faculty is active to attract research grants and foster innovation.

Recommendations:
Link the research strategy and objectives with the research grants
The research theme areas must be under the umbrella of Industry 4.0.

The indicator is fulfilled/~~partially fulfilled/not 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. According to the Self-Evaluation report, Tab. II.2. illustrates the proportion over the last five years of PhD students who have benefited from other sources of funding. This table illustrates the statistics from the School SDSAI. There is no information about the number of students as well as the statistics associated within the Computer and Information Technology field.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The average number of students that received beneficiaries across the School over the reporting is 33. It is not clear from the Self-Evaluation report how many beneficiaries belong to the Computer and Information Technology field.

Recommendations:
Provide the statistics per field.
Liaise with the industrial and public authorities and stakeholders to further exploit opportunities for the PhD students.
Increase the number of research proposals at both national and international levels.
Adopt a strategy to engage academics that are not active in research projects.

The indicator is ~~fulfilled~~/partially fulfilled/~~not 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- The Self Evaluation report provides a summary of the logistics and financial support for the training of the Doctoral students. According to the Annex II.A133, there are expenses to settle the training expenses of PhD students (participation in conferences, summer schools, courses , internships abroad, publication of specialized articles or other specific forms of dissemination, and so on).

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The average percentage allocated for the Computer and Information Technology field within the reporting period is almost 20%. The information provided is not very clear. I was expecting that there is percentage of costs associated with categories such as TURNIT subscription and salary of the academics. The purchases of books cannot be justified since most of the primary source of research includes access to scientific papers. It is not clear, how this budget is distributed per student and per year to attend seminars and events.

Recommendations:

-The Faculty must invest to train PhD students to attend conferences, exhibitions, summer schools and utilise open access publication fees in a more systematic manner.

-There must be a KPI so that at least one dissemination activity is planned yearly for each PhD student within the 3 year period of study. Ideally, one dissemination activity must be planned at the end of each year.

-The supervisory committee could monitor the students to meet these targets.

The indicator is ~~*fulfilled*~~*/partially fulfilled/*~~*not fulfilled*~~*.*

Criterion A.2. Research infrastructure

The Faculty provides a very good environment regarding research facilities, equipment and infrastructure and access to scientific databases so that the PhD students can carry their research projects.

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

Limited information is provided in Section A.2.1.1.1 about the research facilities. The team responsible for the Self Evaluation has sent some videos about the facilities. Only one video described the research activities in English. I could see that the Faculty is equipped with state-of-the art equipment in the areas of Industrial IoT, FPGAs and embedding system and advanced visualisation systems.

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- The Self-Evaluation report provides limited information about two research centers linked with Computer and Information Technology field: Research Centre for Process Control Systems (FIESC) and Scientific Research Centre for Computation. Limited information has been provided about

---

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.

the type of infrastructure used for research experimentation. Such information has been extracted from the videos and it seems that the research infrastructure can support research in the areas of IoT, industrial automation, AI/ML, AR/VR and visualisation. The library provides access to scientific databases such as Springerlink, Thomson WoK, ProQuest Central, Oxford Journals, IEEE/IEL, Science Direct Journals.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. By analysing the information provided, it is evident there is high quality infrastructure to support applied research and experimentation in the research community. However, the research activity is rather fragmented among many research fields with overlapping activities. Several fields within the School have very small number of faculty members (e.g. 2 to 3) to support research in the entire field. This is not realistic. It is recommended to merge several fields together to maximise research output. Additionally, I would expect inter-disciplinary research activities within the School under Industry 4.0 umbrella.

Recommendations:

The Faculty should adopt a strategy to restructure the research fields with a minimum number of five-six academic staff per field.
The Faculty may need to obtain funds so that calibration of equipment (e.g. the Industrial part) is carried out in a systematic manner.
There is a process required within the school regarding the decision making for the purchase of the research infrastructure.

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Criterion A.3. Quality of Human Resources

There is enough information in the Self Evaluation Report regarding the human resources. There are five (5) academics in the Computer and Information Technology field with habilitation certification. There is no information about the allocation of PhD students per academic in the Annex II.30. However, I noticed that there are no sufficient number of academics in other fields (e.g. Geography with 2 academics in 'pension' mode, Material Engineering with 2 academics etc) within the School.

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

There are five (5) academics in the Computer and Information Technology field. Annex II.A311 presents the minimum standards and conditions of the academics in the Computers and information technology field. Annex II.31 provides evidence of the quality process of the advanced doctoral degree program results from CVs, list of publications and scientific research contracts.

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. This indicator meets the minimum threshold requirements. The Faculty has provided the minimum number of required advisors/supervisors as provided in Annex II.30.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. More information is expected to be provided in the Self Evaluation Report to determine the algorithm for the calculation of A1, A2 and A3 metrics for each academic.

Recommendations:

The Web profile of the supervisors must provide in different tabs the following information: research area, research students, key publications and grants. Such information must be provided in both Romanian and English.

The indicator is fulfilled/~~partially fulfilled/not 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- All academics in Computers and Information Technology field are tenured. They have the required qualifications as presented in Annex II.30.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- Annex II.74 provides information in Romanian regarding the teaching and research load per academic. It seems that within USV, no doctoral supervisor exceeds the legal degree of loading of teaching and research norms. However, this information is in Romanian and further analysis cannot be carried out.

Recommendations:
Reduce the number of research areas and engage more academics per research area

The indicator is fulfilled/~~partially fulfilled/not 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. Annex II.41 and Annex II.42 present the advanced training programs for the years 2016-2017 and 2018-2020, respectively. However, these Annexes do not provide enough information about the topics covered per module, learning outcomes and resources and methods of assessments.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- The Faculty provides training and carries out research in different areas within the specific domain. However, there are too many modules offered (13). At the Doctoral level, specialisation should be the main focus of training. Additionally, the method of evaluation should be focussed on critical analysis and preparation of the PhD students to write scientific reports. The material for the courses should be mainly scientific papers from high-impact journals and conferences that have been published within the last 5 years. The evaluation of the curriculum is not very clear and should be revised. It is not clear whether the student learn the technological terms in English.

Recommendations:

The number of courses offered must be reduced.
Revise course curriculum using latest research papers. Use coursework in each module as a method of assessment.
Use virtual learning environment such as Moodle to manage the modules offered.
Link the research strategy with the research facilities.

The indicator is ~~fulfilled~~/partially fulfilled/~~not 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 programs[3] does not exceed 20%.*

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself- Annex II.35 presents a detailed situation of the number of doctoral students supervised by each PhD supervisor in the field.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- There is sufficient number of academics that supervise the PhD students in the field. There are no cases in which an academic supervises more than 8 PhD students at the same time during the period of their PhD studies and there are no cases in which an academic supervises more than 12 PhD students in total.

Recommendations:
Engage in a systematic manner all academics in the supervisor process.

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.
The Academics have experience of carrying out research with research outcomes presented and published at both national and international level in journals and conferences.

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- Annex II.A321, lists all research activities from all PhD supervisors in the field of Computers and Information Technology field. It can be noticed that over 50% of the academics have published over 5 papers in ISI journals with impact factor or presented other relevant achievements in the field such as patents. Moreover, the PhD supervisors are active in conference organisation and participation in scientific journal committees.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- There are few PhD supervisors whose the vast majority (>50%) of research output is before 2015. Additionally, their research output after 2015 is in scientific journals with no impact factors.

---

[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.

Recommendations:

The Department needs to adopt strategy so that academic staff publish in scientific journals with Impact Factor greater than 0.8.

The indicator is fulfilled/~~partially fulfilled/not 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- Annex II.31 and Annex II.A311 provide a summary of the score from academics obtained in the last 5 years. It shows that all supervisors have obtained for the last 5 years at least 25% of the minimum score required by CNATDCU. The indicator has been met.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- The Annex II.31 indicates that all Academic staff are research active and meet the criteria of CNATDCU.

Recommendations:
N/A

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Domain B. EDUCATIONAL EFFECTIVENESS

The Faculty has organised a number of taught courses (modules) at the first year of the program. It is not clear whether these courses overlap with the Master program. There is a research plan with an objective to carry out training in the context of internship, research project and secondment opportunities.

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

Annex II.B111 presents the total number of candidates, the number of candidates who have graduated master's degrees in educational institutions other than USV and have entered the competition for admission to doctoral studies in the last 5 years, and the places financed from the budget put up for competition, both for the doctoral school and for the field of Computers and information technology. The Faculty has attracted candidates that have graduated not only from the USV but from other Universities within Romania.

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.

The Faculty has managed to attract candidates that have graduated either from other Romanian Universities or from abroad. There is an increase in the percentage in the last three years. Although the actual number is rather small, it shows the trend that research activities within the fielfd has attracted graduates from other Universities. This is also evident across that the SDSAI.

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- Tab. II.7 shows that the ratio between master's degree graduates of other institutions and the places financed from the budget exceeds 0.2 demonstrating their ability to attract a considerable number of candidates from outside USV.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. It seems that a 20% intake includes the students that they have graduated from the other Universities. There is a need to improve research results that are presented on the Web site.

Recommendations:

Improve the openness to attract students from other Universities at both national and international level.

The competitive advantage of the Doctoral Program and its link with industrial partner must be highlighted

Improve the information of the web site in both English and Romanian

Use of social media to promote research outputs

Use alumni to attract new students

The indicator is fulfilled~~/partially fulfilled/not fulfilled~~.

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

The process regarding admission, monitoring and evaluation seems to be transparent.

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- Annex II.36 includes information about the selection and admission procedures for the PhD candidates, methodology and specific criteria and standards specified in the admission procedures. The evaluation criteria and the standards required of candidates is provided in the following webpage: https://admitere.usv.ro/admitere-2021/criterii-specifice-admitere-2021. The evaluation and assessment of each applicant comprises two exams (foreign language, specialisation) and interview.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- There is steady and small increase on the number of enrolled PhD students. It is not clear whether the knowledge of English language is considered as part of Test 1. The overall process seems to be transparent. There are no special arrangements for DDS students.

Recommendations:

English knowledge (speaking and writing) is essential. Certification such as IELTS should be considered as criterion for the English language.

Special arrangements should be considered for DDS students.

The indicator is fulfilled~~/partially fulfilled/not fulfilled~~.

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

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself. In the Self-Evaluation report, Annex II.B122 shows an average of 25.33% dropout in the reporting period. There is one student that has been dropped out from the PhD programme within the reporting period.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The report does not explain the reasons for this aforementioned dropout (e.g. skills, financial, personal reasons). The Faculty needs to provide support to students that face different challenges throughout the PhD studies. There may be a need to formalise the progress of the students on annual basis.

Recommendations:
Analyse the expel rate and provide mechanism to reduce it.
Provide extra support to students that have failed in the first attempt in the course evaluation.

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Criterion B.2. The content of doctoral programs

The program offers a variety of training activities including courses, secondment in another peer institution, conference and events participation, papers published in international journals and internships in companies. All these activities are presented in Annex II.41 and Annex II.42. Additionally, there are transversal skills as reflected in the subject descriptions that are described in Annex II.43.

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. The curriculum provides technical training to different technical topics in the field of Electronic Computers and Information Technology as well as training on academic integrity.

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. All the information is provided in the Romanian. It is not very clear to assess the courses offered and their content. It is not clear whether students' attendance is mandatory. I had a quick look on Annex II.43 that provides some basic information on the courses and training. The method of assessment in each course is not very clear. I also noticed that there is a lack of scientific papers published in the last 4 years that could be used as a reference material in any of the courses. Several courses have used textbooks that are not appropriate at the Doctoral level.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The curriculum includes a diversity of technical courses as well as important courses related to research methods and academic integrity. This is a large number of courses ideal for a Master with specialisation. The learning outcomes of each course are not clear. It is not clear whether students study scientific papers in the English language. The same applies to the evaluation of each course and the process to handle failures. Do the students have to do resit exams within the same year? What happens if students fail in more than 1 more module? Is there any interruption process? Looking at the statistics, it is very challenging to finish the program within 4 years of study.

---

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.

Recommendations:

The course material should be revised by using state of the art/survey research papers as a primary resource.

Coursework must be one of the components for evaluation.

Introduce rules regarding progression in the courses that are attended in the first year.

A course related to innovation management (patent filing, research commercialisation route, spin-off and start-up process) should be introduced.

The indicator is ~~fulfilled~~/partially fulfilled/~~not 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. A common course has been introduced for all doctoral fields in IOSUD-USV called Ethics and Academic Integrity. The discipline also provides seminars (Annex II.43), which are taught in such a way that PhD students understand the role of ethics in academic life as well as what is involved in not following the rules of similarity of a paper.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The University has introduced a mandatory course related to ethics, plagiarism and academic integrity to all Doctoral training programs.

Recommendations:

Define the course evaluation for the Ethics course.

The indicator is fulfilled/~~partially fulfilled/not 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 activities[5].

- description of the facts, the findings from the assessed institution's documents and the evaluation visit itself. Annex II.43 describes the means by which the doctoral students are provided with the necessary competences and how to achieve the skills and attitudes required for research. In practice, this is evident from the design of cognitive objectives such as knowledge and understanding, explanation and interpretation, as well as from technical, professional and attitudinal-value objectives. The Faculty ensures that there is a PhD supervisor allocated per student to provide mentoring and guidance support as well as guidance towards his/her training.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself- It is not clear how critical thinking and analysis is embedded in the teaching methodology. There is also a questionnaire that is used to get feedback from doctoral students regarding their experience. It is not clear and there is no evidence how this feedback is used to improve training delivery.

Recommendations:

---

[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.

Critical thinking and research independence methodology must be embedded in the training.

A systematic approach on internship opportunities and training roadmap must be defined for each PhD student.

The indicator is ~~fulfilled~~/partially fulfilled/~~not fulfilled~~.

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- The Self-Evaluation report presents the joint activities through the collaboration between the PhD student and the supervisory committee for theoretical developments and the interpretation of experimental results, on the one hand, as well as collaboration for the development of scientific papers and articles or patent applications and laboratory stands or innovative products. The Self-Evaluation report indicates that for each doctoral student there is a mentoring committee, which usually consists of the doctoral supervisor in the respective field and at least three specialists.
- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The Annexes indicate that the supervisors meet their PhD students to contribute to theoretical and scientific collaboration. However, there is limited information regarding the meetings, the topics of discussion and action points. This is important for conflict management.

Recommendations:
An IT system is required to record the meetings of the PhD student with the supervisory team and the agreed action plans.

The indicator is ~~fulfilled~~/partially fulfilled/not 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. Annex II.B215 contains a situation regarding doctoral students during their doctoral studies and their guidance commissions, at the time of evaluation. The analysis of the data in this Annex reveals that in the Computers and Information Technology field, there are 18 doctoral students and 13 mentoring teachers. As a result, the student / teacher ratio is 1.38: 1 (18:13), is below the maximum limit defined by the ARACIS criterion.
- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The Faculty has enough resources to support the PhD students.

Recommendations:

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.
The evaluation has been carried out taking into account doctoral students activities (training and internships) and research output per student.

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

The Self-Evaluation report presents an overview of the results from the PhD Students in terms of presentations, paper published, research project participation, internship engagement and event training. Table

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. This is a very challenging task to read and evaluate 5 randomly selected research papers. It was very difficult to retrieve these papers from the Self-Evaluation report and Annex II.45. The scholar profile of the PhD students has been used to pick up the following papers:

- Vatavu, R.D., Gheran, B.F. and Schipor, M.D., 2018. The impact of low vision on touch-gesture articulation on mobile devices. IEEE Pervasive Computing, 17(1), pp.27-37.
- Corotinschi, G. and Găitan, V.G., 2018, May. Enabling IoT connectivity for Modbus networks by using IoT edge gateways. In 2018 International Conference on Development and Application Systems (DAS) (pp. 175-179). IEEE.
- Gheorghe, G., Nicu, B. and Lupu, C., 2015. CLASSIFICATION ALGORITHMS OF FACIAL EXPRESSIONS BY USING THE FEEDFORWARD NEURAL NETWORKS. Annals of'Constantin Brancusi'University of Targu-Jiu. Engineering Series, (4).
- Andries, L., Gaitan, V.G. and Moisuc, E.E., 2015, October. Programming paradigm of a microcontroller with hardware scheduler engine and independent pipeline registers-a software approach. In 2015 19th International Conference on System Theory, Control and Computing (ICSTCC) (pp. 705-710). IEEE.
- Zagan, I., Gaitan, V.G., Petrariu, A.I. and Brezulianu, A., 2017. Healthcare IoT m-GreenCARDIO Remote Cardiac Monitoring System–Concept, Theory of Operation and Implementation. Advances in Electrical and Computer Engineering, 17(2), pp.23-30.
- Jureschi, C.M., Linares, J., Boulmaali, A., Dahoo, P.R., Rotaru, A. and Garcia, Y., 2016. Pressure and temperature sensors using two spin crossover materials. Sensors, 16(2), p.187.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The selected papers include original contributions with some theoretical analysis and experimentation. Some of these papers published in good international journals. There are also papers presented in international conferences supported by IEEE. After reviewing the entire publication list, there is a large portion of papers published either in national conferences or national journals.

Recommendations:
The Faculty must define a strategy so that the research outputs become internationally excellent with research outputs in journals with Impact Factors greater than 1.

The indicator is fulfilled/~~partially fulfilled/not 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. Annex II.B312 presents a summary of presentations given in international events (held either nationally or abroad). According to the data in the Annex, it is found that the ratio obtained between the number of presentations and the number of doctoral students who completed their doctoral studies in the evaluated period (last 5 years) is 3.55. It is found that the minimum limit imposed by 1 is exceeded, so the criterion is met.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. It seems that all presentations have taken place in the period 2015-2018. No presentations have been carried out from 2019 and onwards.

Recommendations:

The Faculty must adopt a strategy where outputs can be presented in international excellent events that are supported by scientific organisations such as ACM and IEEE. A KPI must be defined for each student regarding the conferences participated as an author presenter.

The indicator is fulfilled/partially fulfilled/not 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.
The Faculty is engaged with academics from other national/international institutes for the defence of PhD theses.

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. Annex II.B321 presents the allocated examiners outside IOSUD-USV assigned to each doctoral student. It is found that within the last five years for the Computers and information technology field, there are no cases in which two (2) appointments of a certain referent from a higher education institution other than IOSUD evaluated are exceeded, for theses coordinated by the same head of doctorate, in a year.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The results of this evaluation highlighted the fact that the academics taking part in the Thesis defence committees did not exceed 2 participations for the theses coordinated by the same doctoral supervisor in one year.

Recommendations:

The indicator is fulfilled/partially fulfilled/not 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. In the Computers and Information Technology field, there are only 9 doctoral theses that have been defended. Therefore, this metric is not applicable.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. All reviewers/evaluators meet this criterion.

Recommendations:

The Faculty must keep track of the defence committees.

The indicator is fulfilled/~~partially fulfilled/not fulfilled~~.

Domain C. QUALITY MANAGEMENT

There is an internal quality management system that has been used for the monitoring and performance evaluation of the PhD students.

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

The Faculty has used a reasonable and realistic process in terms of admission, rules and expectations and monitoring of the activities associated with the PhD students. Such process is provided centrally by the University and has been adopted by the Faculty.

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.

The Faculty has used a reasonable and realistic process in terms of admission, rules and expectations and monitoring of the activities associated with the PhD students. Such process is provided centrally by the University and has been adopted by the Faculty.

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. The University evaluates and monitors the evolution of all the Doctoral Schools centrally. More information is provided in the relevant Annexes. The advisors provide mentoring support to the PhD students and assist them publishing their research output to international journals and conferences. There is a good infrastructure in the areas of Industrial IoT, FPGA and Digital Design, Multimedia Visualization and AR/VR (this information has been provided through the shared videos). There is a clear process how the progress of the students is assessed. The training includes theoretical training on technological topics and soft-based skills and participation to international conferences.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The University has taken measures to enhance the engagement of the supervisory team.

Recommendations:

Engagement of different stakeholders (e.g companies, public organisation) on the program design.

The syllabus of the courses must be revised. Guest lectures must be embedded in the delivery.

The indicator is fulfilled/~~partially fulfilled/not 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.

Annex I.30 and Annex II.40 include the questionnaires used to evaluate doctoral school activities. It is not clear how Annex I.30 is not anonymised. The questionnaire has been used to request the opinion of the Doctoral students regarding the PhD programme, "the learning outcomes" and the competencies, skills and attitudes that Doctoral students should develop. Student satisfaction is provided for 2018 only in Annex II.C112. The level of satisfaction is approximately 90%. The internal monitoring of doctoral school is provided in the Annex II.51 and Annex II.52. There is a need to provide student satisfaction on yearly basis.

Recommendations:

Apply GDPR policy to the questionnaire.

Use a systematic approach so that students' feedback is used to enhance the Doctoral training program.

The indicator is ~~fulfilled~~/partially fulfilled/~~not fulfilled~~.

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

There is information on the Faculty's Web site ([https://ceac.usv.ro/documente- usv/regulamente-usv/](https://ceac.usv.ro/documente-usv/regulamente-usv/)) regarding the Doctoral training program and the expectations from the PhD students. There is also enough support regarding the learning resources through access to important scientific databases.

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

Most of the information on the Web is presented in Romanian. After interacting with the Faculty members and the students, there are some events organised where the PhD program is presented to the Master students.

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. The University uses a web link for the doctoral students. The portal includes information such as the Regulation of the Doctoral School, the doctoral study agreement, Institutional Regulation and the standards associated with the thesis.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The Faculty has provided all the requested information. There is a solid workflow system regarding the management of the training school. More detailed and qualitative analysis cannot be done since the information is in Romanian.

Recommendations:

The Academics and the Doctoral students must use their corporate email for all University activities. This important to maintain the GDPR policy.

The indicator is fulfilled/partially fulfilled/not fulfilled.

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

Overall, I have seen that the Faculty provides the appropriate resources (supervisors, research labs, textbooks and access to scientific databases etc) to students to carry out their research activities.

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. The Faculty has provided the appropriate resources to the PhD students. This includes access to scientific databases such as Springerlink, Thomson, IEEE, etc. These databases could be used as a reference point from the students to carry out research in the area of Computers and Information Technology.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The Faculty provides good resources to support the students. It would be good to embed in the questionnaire sent to students, questions related to the library resources. Resources that are not utilised should be identified.

Recommendations:

Embed questions regarding level of satisfaction from library resources in the questionnaire

The indicator is fulfilled/partially fulfilled/not 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.

The University ensures the verification of the authenticity and originality of doctoral thesis and other scientific papers using Turnitin software. It is very encouraging that Turnitin is used across all phases of the training program.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. It is very positive that plagiarism/academic misconduct is managed centrally. However, It is not clear what penalty is applied and there is no evidence regarding use cases that have been flagged. There is no evidence from Turnitin regarding the thesis and manuscripts checked.

Recommendations:

Make clear the penalties applied to plagiarism.

The indicator is fulfilled/partially fulfilled/not 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. As described in Section B, the students have access to state-of-the-art labs that could be used for the research experimentation. The access of Doctoral students to these facilities is unrestricted and a well-established schedule with the Doctoral supervisor has been set-up. Through the discussion with Faculty staff and students, I have found that some of these labs are pioneer in the field (e.g. Industrial IoT, FPGA and Digital Design etc).

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The quality and quantity of the research infrastructure is very good to support the research activities of the students. It is not clear whether calibration has been considered for the Industrial IoT research facility.

Recommendations:

The indicator is fulfilled/partially fulfilled/not fulfilled.

Criterion C.3. Internationalization

To enhance internationalization, the University has signed ERASMUS agreements with universities from abroad.

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

There is a clear strategy of the University to enhance its Internationalization. However, not enough evidence has been provided regarding joint research programs and collaborative post-doc research with peer institutions.

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. The University has established ERASMUS partnership agreements with peer universities from abroad. Within the five years period, 99 mobilities and 166 conference participations have been reported within the SDSAI school. Table II.10 illustrates the mobility and event participations for the students in the field. The average within the reporting period is 36,66%.

- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. Although the cohort is relatively small, the trend shows a decline of the students participating in mobility and conferences in comparison with the School cohort. There is a need that the School defines

a strategy to improve students' internalization engagement. I would suggest to define a KPI so that each student must participate at least in 1 event every year.

Recommendations:

Define a KPI regarding participation in mobility and international events and winter/summer schools.

The indicator is fulfilled/~~partially fulfilled/not 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. The Self-Evaluation reports that 2 PhD students have been co-supervised from experts from abroad. There is also a list of experts from academic institutions from abroad that have given guest lectures to the PhD students.
- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. The co-supervision from abroad has been done on ad-hoc basis. The Faculty needs to define a strategy to co-supervise PhD students and organise guest lectures in a systematic manner and liaise with IEEE and ACM. Guest Lectures have not been spread over the year. The University should exploit ERASMUS agreements so that peer academics from the collaborative institutions could give guest lectures to the students. The online meeting tools should be used to increase the intensity of the guest lectures.

Recommendations:
Define a strategy to organise guest lectures in a systematic manner.

The indicator is fulfilled/~~partially fulfilled/not 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. The University participated in various events to promote various research activities. There are few PhD students and postdocs from foreign institutions (mainly from Africa) that have visited University for joint research activities.
- analysis of the facts, the findings from the assessed institution's documents and the evaluation visit itself. There is a need to provide a strategy to establish this collaboration in a more systematic manner with European peer institutions. There is no defined strategy to attract international students. The Faculty will need to advertise PhD positions in English.

Recommendations:
Define a strategy to attract international students

The indicator is ~~fulfilled~~/partially fulfilled/~~not fulfilled~~.

IV. SWOT Analysis

Strengths:	Weaknesses:
- Investment in building infrastructure and research equipment, especially in the area of Industry 4.0. -Well-defined workflow for admission and monitoring of the PhD students.	- The research areas are too broad in comparison with the number of academic staff. -Too many research areas within the School. -There is a lack of inter-disciplinary research activities within the School. -Lack of systematic collaboration with national industries and public stakeholders. -Lack of a culture to establish collaboration among the PhD students. -Lack of utilising questionnaire feedback to improve program delivery. -Lack of clear strategy to attract foreign PhD students. -Few academics in the School are retired.
Opportunities:	Threats:
- Explore the competitive advantage of the region to attract students from the neighbouring countries (Moldova). -Maximise investment in the area of Industry 4.0. -Manage the innovation systematically through patent filing and IPR.	- The level of financial support may not be attractive for the talented graduates who prefer to pursue PhD studies abroad. -The overlapping research activities with other Doctoral School poses questions regarding sustainability and the attraction of sufficient number of students. - Pandemic has major impact on studies and on-line teaching methodologies must be adopted.

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	A	A.1.1.1.	Fulfilled	**-The Faculty should make arrangements for candidates with disabilities.** **It seems that there is no process regarding the replacement of students/academics that leave the University and have been selected as members of the Council.** **-The Council should ensure that the members of the Council have got overlapping leadership and technical skills**

				contributing to the strategy and mission of the Doctoral training program.
2	A	*A.1.1.2*	Fulfilled	-A clearer process is required regarding the allocation and even distribution of students to supervisors. - It not clear where multi-disciplinary projects are carried out within the School. - There is a need to establish more systematic collaboration between the Doctoral students and the other researchers within the Faculty.
3		*A.1.2.1*	Fulfilled	- There is a need to integrate the progress of the PhD students to the main IT system (https://admitere.usv.ro/). -The IT system should provide statistics and generates tables with graduates of doctoral studies based on which doctoral degrees are issued. -Use of central system to record meetings and the action points between the Supervisor Team and the PhD student -Use of the IT system to support the alumni.
4	A	*A.1.2.2*	Fulfilled	-Use of anonymised samples of PhD theses to train students on plagiarism. -Make clear the penalty imposed in case plagiarism detected.
5	A	*A.1.3.1*	Fulfilled	-Link the research strategy and objectives with the research grants.

				-The research theme areas must be under the umbrella of Industry 4.0.
6	A	*A.1.3.2*	Partially Fulfilled	-Provide the statistics per field. -Liaise with the industrial and public authorities and stakeholders to further exploit opportunities for the PhD students. -Increase the number of research proposals at both national and international levels. -Adopt a strategy to engage academics that are not active in research projects.
7	A	*A.1.3.3.*	Partially Fulfilled	-The Faculty must invest to train PhD students to attend conferences, exhibitions, summer schools and utilise open access publication fees in a more systematic manner. -There must be a KPI so that at least one dissemination activity is planned yearly for each PhD student within the 3 year periods of study. Ideally, one dissemination activity must be planned at the end of each year. -The supervisory committee could monitor the students to meet these targets.
8	A	*A.2.1.1.*	Fulfilled	-The Faculty should adopt a strategy to restructure the research fields with a minimum number of five-six academic staff. -The Faculty may need to obtain funds so that calibration of equipment

				(e.g. the Industrial part) is carried out in a systematic manner on frequent basis. -There is a process required within the school regarding the decision making for the purchase of the research infrastructure.
9	A	*A.3.1.1.*	Fulfilled	- The Web profile of the supervisors must provide in different tabs the following information: research area, research students, key publications and grants. Such information must be provided in both Romanian and English.
10	A	*A.3.1.2.*	Fulfilled	-Reduce the number of research areas and engage few academics.
11	A	*A.3.1.3*	Partially Fulfilled	-The number of courses offered must be reduced. -Revise course curriculum using latest research papers. Use coursework in each module as a method of assessment. -Use virtual learning environment such as Moodle to manage the modules offered. -Link the research strategy with the research facilities.
12	A	*A.3.1.4*	Fulfilled	- Engage in a systematic manner all academics in the supervisor process.
13	A	*A.3.2.1*	Fulfilled	- The Department needs to adopt strategy so that academic staff publish in scientific journals with Impact Factor greater than 0.8.
14	A	*A.3.2.2*	Fulfilled	N/A
15	B	*B.1.1.1*	Fulfilled	- Improve the openness to attract students from

				other Universities at both national and international level. -The competitive advantage of the Doctoral Program and its link with industrial partner must be highlighted -Improve the information of the web site in both English and Romanian -Use of social media to promote research outputs -Use alumni to attract new students.
16	B	*B.1.2.1.*	**Fulfilled**	-English knowledge (speaking and writing) is essential. Certification such as IELTS should be considered as criterion for the English language. -Special arrangements should be considered for DDS students.
17	B	*B.1.2.2.*	**Fulfilled**	-Analyse the expel rate and provide mechanism to reduce it. -Provide extra support to students that have failed in the first attempt in the course evaluation.
18	B	*B.2.1.1.*	**Fulfilled**	- The courses offered are too large taken into account the cohort. You should make the course training more focussed. -Introduce rules regarding progression in the courses that are attended in the first year. - The number of courses should be reduced. -The course material should be revised by using state of the art/survey research papers as a primary resource.

				-Coursework must be one of the components for evaluation. -Introduce a compulsory module related to innovation management (patent filing, research commercialisation route, spin-off and start-up process).
19	B	*B.2.1.2.*	Fulfilled	-Define the evaluation for the Ethics course.
20	B	*B.2.1.3.*	Partially Fulfilled	-Critical Thinking and research independence methodology must be embedded in the training. -A systematic approach on internship opportunities and training roadmap must be defined for each PhD student.
21	B	*B.2.1.4.*	Partially Fulfilled	-An IT system is required to record the meetings, agenda and the action plan.
22	B	*B.2.1.5.*	Fulfilled	N/A
23	B	*B.3.1.1*	Fulfilled	- The Faculty must define a strategy so that the research outputs become internationally excellent with research outputs in journals with Impact Factors greater than 1.
24	B	*B.3.1.2.*	Fulfilled	- The Faculty must adopt a strategy where outputs can be presented in international excellent events that are supported by scientific organisations such as ACM and IEEE. A KPI must be defined for each student regarding the conferences participated as an author presenter.
25	B	*B.3.2.1.*	Fulfilled	N/A
26	B	*B.3.2.2*	Fulfilled	The Faculty must keep track of the defence

					committees so the criterion is fulfilled.
27	C	*C.1.1.1.*	Fulfilled		-Engagement of different stakeholders (e.g companies, public organisation) on the program design. -The syllabus of the courses must be revised. -Guest lectures must be embedded in the delivery.
28	C	*C.1.1.2.*	Partially Fulfilled		-Apply GDPR policy to the questionnaire. -Use a systematic approach so that students' feedback is used to enhance the Doctoral training program.
29	C	*C.2.1.1.*	Fulfilled		- The Academics and the Doctoral students must use their corporate email for all University activities. This important to maintain the GDPR policy.
30	C	*C.2.2.1.*	Fulfilled		-Embed questions regarding level of satisfaction from library resources in the questionnaire
31	C	*C.2.2.2.*	Fulfilled		-Make clear the penalties applied to plagiarism.
32	C	*C.2.2.3.*	Fulfilled		N/A
33	C	*C.3.1.1.*			-Define a KPI regarding the participation in events and winter/summer schools
34	C	*C.3.1.2.*	Fulfilled		N/A
35	C	*C.3.1.3.*	Partially Fulfilled		Define a strategy to attract international Students.

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

I am satisfied with the overall Doctoral training program. The Faculty has designed and implemented an interested Doctoral program in the area of Computers and Information Technology. The PhD supervisor team has produced interested research results published at both international conferences and journals. Few weaknesses have been identified that should be considered to grow the PhD community and produce excellent scientific results.

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.*

Professor Anastasios Dagiuklas