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External Evaluation Report of the Doctoral Study Programme "Computer Science and Information Technology" at "Ferdinand I" Military Technical Academy

Contents

I. Introduction

This external evaluation report was drafted by Prof. Sokratis Katsikas, Norwegian University of Science and Technology. It reports on the findings and assessment of the doctoral programme in Computer Science and Information Technology at "Ferdinand I" Military Technical Academy (FIMTA) that resulted from the periodic external evaluation of doctoral study domains. The evaluation was carried out in the period 13-15 October 2021 - see Annex I - in a mixed manner (all meetings were held online, and a site visit was paid by the coordinator of the evaluation committee). The committee consisted of Prof. Mircea Popa (coordinator), Prof. Sokratis Katsikas (international expert), and Robert-Florin Sunamaru (PhD student).

The doctoral domain in Computer Science and Information Technology is part of the Doctoral School in Defense and Security Systems Engineering at FIMTA, which currently comprises seven doctoral programmes of study. The mission of the Doctoral School is to "*develop educational activities at doctoral level, as well as research activities in the domains of competence identified by the accredited doctoral programs.*" The doctoral study programme's mission is the same with that of the Doctoral School. At the time of writing of the Internal Evaluation Report (IER), the Doctoral School had 22 doctoral advisors and 116 enrolled doctoral students.

The objectives of the doctoral study programme in Computer Science and Information Technology (common to all doctoral programmes in the Doctoral School at FIMTA) are:
1. development of research – development-innovation activities in interdisciplinary domains;
2. disseminating the results of studies, inventions and innovations;
3. developing partnerships to ensure collaboration with public and private research institutions;
4. directing the teaching staff with scientific preoccupations toward research focused on the current needs of the Romanian Army and Romanian society;
5. using the infrastructure of the FIMTA centers of excellence and streamlining the research at the doctoral cycle level;
6. further training of teaching staff through documentation strategies and exchanges of experience in similar institutions in the country and abroad;

7. development of research and cooperation programs with other institutions;
8. selection of doctoral and post-doctoral students based on value-criteria, and on the cognitive skills of the candidates registered for the admission contest;
9. developing intellectual capacities, self-assessment and research skills and stimulating the participation of doctoral students in specific national and international events.

The doctoral study programme in Computer Science and Information Technology has had 14 doctoral students enrolled in the period 2015-2020. In the same period, 10 students defended their PhD thesis. The number of active PhD students in the programme is 13. There is 1 doctoral supervisor affiliated with the doctoral study programme.

The students of the doctoral study programme in Computer Science and Information Technology are affiliated with the Center of Excellence in Advanced Cyber Security Technologies (CETASC). Quality assurance follows the policies and procedures of FIMTA.

II. Methods used

This evaluation is based on data, information and findings derived from:

-   The analysis of the internal evaluation report of the doctoral study programme in Computer Science and Information Technology and its Annexes;
-   The analysis of documents, data and information available on the FIMTA website, in electronic format;
-   Meeting/discussions with doctoral students in the doctoral study programme in Computer Science and Information Technology;
-   Meeting/Discussions with the graduates of the doctoral study programme in Electronic Engineering, Telecommunications and Information Technology;
-   Meeting/Discussions with employers of the graduates in the doctoral study programme in Computer Science and Information Technology;
-   Meeting/Discussions with the doctoral advisors in the doctoral study programme in Computer Science and Information Technology;
-   Additional information provided in the form of responses to clarification questions posed by the members of the evaluation team (Annex II).

Most of the aforementioned sources are in Romanian. The writer of this report has no knowledge of the language, hence he is in many cases unable to accurately assess the extent to which the content of a document satisfies the requirements set out be the respective standard(s).

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

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

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.

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.*

a. FIMTA organizes university-level doctoral studies through the IOSUD, according to the *Regulations on organizing and conducting doctoral studies* (https://mta.ro/wp-content/uploads/2019/08/Reg-org-si-desf-programe-doctorat-2017-min.pdf).
b. FIMTA runs doctoral studies within the IOSUD-FIMTA. The CSUD is chaired by its Director, who is assisted by the Council of the Doctoral School (CDS). The CDS consists of 4 members, 3 doctoral supervisors and 1 doctoral student. The methodology for conducting elections for the membership in the management bodies has been provided at https://www.mta.ro/wp-content/uploads/2019/02/Metodologie-alegeri-structuri-de-conducere_2011.pdf and the methodology for conducting the election of the Director has been provided in Annex III.A.1.1.1. Participants in the interviews confirmed that the elections were conducted according to the aforementioned regulations and procedures.
c. Matters related to the admission of doctoral students are regulated in the *Regulations for organizing and conducting the contest for admission to doctoral studies,* available at https://mta.ro/wp-content/uploads/2019/08/Reg-org-si-desf-programe-doctorat-2017-min.pdf. Those related to the completion of doctoral studies are regulated by the *Procedures and criteria for the evaluation of doctoral theses,* available at https://mta.ro/wp-content/uploads/2021/02/Regulament-sustinere-teza-doctorat-min.pdf.

d. The mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad are described in regulations available at https://mta.ro/procedura-privind-recunoasterea-automata-de-catre-academia-tehnica-militara-ferdinand-i-a-calitatii-de-conducator-de-doctorat-obtinuta-in-institutii-de-invatamant-universitar-acredi and at https://mta.ro/procedura-privind-recunoasterea-automata-de-catre-academia-tehnica-militara-ferdinand-i-a-diplomei-de-doctor-si-a-titlului-de-doctor-in-stiinte-obtinute-in-institutii-de-invataman respectively. Those for obtaining the habilitation degree are described at https://mta.ro/wp-content/uploads/2021/02/Regulament-abilitare_07_01_2021-Site-min.pdf.

e. As already mentioned, the CSD has been formed. According to the IER, "*it meets whenever necessary*". According to the document titled "Lista sedintelor CSUD din anul universitar 2019-2020" (see Annex III) that was provided following a request for clarifications, the CSD meets frequently (on average every two weeks).

f. A doctoral studies contract is concluded between the University and each doctoral student enrolled to the doctoral study program. A template for such a contract is available at https://mta.ro/wp-content/uploads/2021/10/Model-Contract-studii.pdf.

g. According to the IER, internal analysis and approval procedures regarding proposals on the topics and themes of the doctoral programme are included in the *Regulations on organizing and conducting doctoral studies*.

Recommendations:
1. All regulations and procedures regarding the doctoral study, and in particular the model contract, should be also made available in English, in the interest of informing FIMTA's international doctoral students.
2. Schedule regular CSD meetings in addition to holding unscheduled ones when necessary.

The indicator is fulfilled.

Performance Indicator A.1.1.2. The doctoral school's 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.

According to the IER, the regulation abides by all national legislation pertinent to the organization of doctoral studies. As all the documents supporting this claim are in Romanian, the writer was unable to verify the claim. This should not be taken to mean that there is any doubt whatsoever on the validity of the claim.

Recommendations: None

The indicator is fulfilled.

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

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.

FIMTA maintains both written and IT-based records of its doctoral students, including an Excel-based system. According to the IER, the latter contains the identification data of the doctoral students, the contact data, the doctoral field, the name and surname of the doctoral supervisor, the year of registration, the stage of preparation (exams and reports) and the situation of payment of fees. The writer was unable to establish the functionality of the system and to assess its effectivess, as he did not participate in the site visit.

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.

FIMTA makes use of the Sistemantiplagiat platform. An example of the use of this system, that also serves as evidence of such use, is provided in Annex III.A.1.2.2 of the IER.

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.

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.

According to the IER, during the assessment period, seven grants relevant to the doctoral programme in Computer Science and Information Technology were awarded. These grants address relevant themes of the domain. Following a request for clarifications, a list of doctoral students engaged with these grants was provided.

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%.

According to the IER 4 PhD students undergoing doctoral training (out of a total number of 13) were financially supported by funded research projects. Consequently, at the time of evaluation, the percentage of PhD students who benefit from sources other than government funding through research grants, is 30.8%.

Recommendations: None

The indicator is fulfilled.

Performance Indicator *A.1.3.3.[1] 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 IER includes a table with details regarding this indicator. Based on the numbers provided therein, the average percentage calculated over the whole period of assessment is 39.4%. It is to be noted, however, that zero budget financing is reported; the sole source of income in the IER appears to be fees. Following a request for clarification, it has been established that the way the "Ferdinand I" Military Technical Academy is financed is a little bit different from the civilian universities. They do not receive funds from the Ministry of Education for each student admitted on budget places but from the Ministry of Defense, based on other criteria. Budget places can be occupied only by personnel working for the Ministry of Defense (engineer officers) that receive a salary during the doctoral studies. This is why Table III.A.1.3.3 includes zero amounts for this category.

Recommendations: None

The indicator is fulfilled.

Criterion A.2. Research infrastructure

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

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

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[1] 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.

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.

The writer did not participate in the site visit, therefore first hand knowledge of the alignment of the venues and of the material equipment available to the doctoral school to the requirements of the assumed mission and objectives has not been acquired. The research activity in the doctoral study programme Computer Science and Information Technology is carried out mainly in the laboratories of CETASC. The research infrastructure at CETASC consists of a number of devices, equipment, testing and evaluation equipment and software systems, unique in Romania (Annex III.A.2.1.1). Overall, the infrastructure as described in the IER and in the FIMTA website is in line with the mission and objectives of the doctoral study programme and enables carrying our highly quality research in this domain.

Recommendations: None

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

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

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.

Currently there is only one doctoral advisor affiliated with the doctoral programme in Computer Science and Information Technology, namely Prof. eng. Victor-Valeriu Patriciu, who meets the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when this evaluation was carried out. Additionally, there are two more professors that meet the criteria and are in the process of completing their habilitation thesis, namely Prof. eng. Ion Bica and Prof. eng. Virgiliu-Mihail Togan.

Recommendations:
1. Expedite the completion of the habilitation process for Prof. Bica and Prof. Togan.

The indicator is partially 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.

Prof. eng. Victor-Valeriu Patriciu is employed on a fixed-term employment contract.

Recommendations:

1. Expedite the completion of the habilitation process for Prof. Bica and Prof. Togan.

The indicator is partially 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.

The training programme consists of 6 courses, namely

1. Advanced cryptography
2. Computer networks and distributed systems
3. Information security and risk management policies
4. General research methods and methodology of elaboration of scientific papers
5. Ethics and academic integrity
6. Elaboration of the scientific research project for the presentation of the topic and methodology for the realization of the doctoral thesis

Descriptions of these courses have been provided in Annex III.A.3.1.3 of the IER. These indicate that the responsible professor for each course of the training component is among the doctoral advisors of the programme. Prof. Nicolaescu is also the course responsible for two of these courses.

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 programs[2] does not exceed 20%.

The single doctoral advisor (Prof. Victor-Valeriu Patriciu) currently supervises 13 doctoral students, of which 2 have interrupted their studies.

Recommendations:

1. Expedite the completion of the habilitation process for Prof. Bica and Prof. Togan.

The indicator is partially fulfilled.

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[2] 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.

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

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.*

Prof. Victor-Valeriu Patriciu, who is the single doctoral study programme advisor, meets the requirements set out in this performance indicator.

Recommendations: None

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.*

Prof. Victor-Valeriu Patriciu, who is the single doctoral study programme advisor, meets the requirements set out in this performance indicator.

Recommendations: None

The indicator is fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

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

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.

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.

During the period of assessment, 14 doctoral students enrolled in the programme. Clarifications received following a request by the evaluation team, provide two examples of students that are graduates of the Polytechnic University of Bucharest. It is to be noted that because budget-financed places can be occupied only by personnel working for the Ministry of Defense (engineer officers), graduates of other higher education institutions can occupy fee-paying places only. The number of places financed from the national budget during the reporting period was 3. Consequently, the ratio between the number of candidates in the last five years and the number of places financed from the national budget put up for competition in the doctoral programme is 4.6, i.e. well above the required threshold.

Recommendations: None

The indicator is fulfilled.

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

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.

Admission at doctoral studies is regulated by the pertinent regulations, as discussed in Section A.1 of this report. The admission contest for doctoral studies consists of an admission colloquium (oral examination, before an admission commission) where the candidate presents his scientific achievements (publications, contracts, other professional / scientific achievements that can be evaluated based on concrete results), as well as a presentation of the research topic s/he wants to deepen through doctoral studies. The admission rate for the past three years was 50%, 100%, and 100% respectively.

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 admission[3] does not exceed 30%.

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[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.

No student dropped out in the assessment period.

Recommendations: None

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

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.

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.

Both requirements of the present indicator are met.

Recommendations:
1. Make the course syllabuses available in English and publish them on the institutional website

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.

The training component includes one such course.

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 activities[4].

Such mechanisms are part of the IOSUD quality management approach.

Recommendations: None

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[4] 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.

The indicator is 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.

Doctoral candidates are counselled by a supervision committee, which consists of their doctoral advisor and three other faculty members with expertise in the research area of each candidate. Feedback and guidance is provided regularly. The doctoral students and graduates of the programme that the evaluation committee met confirmed their satisfaction with their interaction with their doctoral advisors.

Recommendations: None

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.

The total number of faculty members in supervision committees is 6. As 13 doctoral candidates are enrolled in the doctoral study programme in Computer Science and Information Technology, the ratio of doctoral candidates to teaching staff providing doctoral guidance is 2.16.

Recommendations: None

The indicator is fulfilled.

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

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

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.

A list of 115 such papers has been provided, and copies of five papers have been provided to the evaluation team, following a pertinent request. Based on this information, it follows that each of the 10 PhD students who was awarded the PhD in the assessment period has published at least one article. Most of these publications contain significant original contributions in the respective domain.

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.*

As per the discussion under criterion B.3.1.1 above, each PhD student who was awarded the PhD in the assessment period has made at least one such presentation.

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.

*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.*

According to the information provided in Annex III.B.3.2.1, no more than two doctoral theses of the doctoral study programme in Computer Science and Information Technology were supervised by the same doctoral advisor and allotted to the same external referent, from a different higher education institution.

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.*

In the past five years 10 doctoral theses in the doctoral study programme in Computer Science and Information Technology were defended. According to the information provided in Annex III.B.3.2.1, Prof. eng. Valentin Christea from the Polytechnic University of Bucharest was involved with reviewing 5 of these theses. Accordingly, the ratio specified in this criterion is 0.5, i.e. higher than the required threshold.

Recommendations:

1. Broaden the pool of external doctoral theses reviewers.

The indicator is not fulfilled.

Domain C. QUALITY MANAGEMENT

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

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.

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.*

The IOSUD has established and observes a number of regulations and procedures enabling the internal quality assurance and assessment of all the items listed in the description of the performance indicator.

Recommendations: None

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.*

Such mechanisms consist of regular appointments with the doctoral students. Evidence of an action plan drafted and implemented to address the findings of these mechanisms has not been identified.

Recommendations:

1. Establish a mechanism for formulating and implementing an action plan to address issues identified in student-provided feedback, and ensure that this is communicated to the students.

The indicator is partially fulfilled.

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

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

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.*

All the information prescribed in the performance indicator is available at the FIMTA website. Unfortunately, not much of it is available in English.

Recommendations:
1. Make all this information available in English on the website.

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.

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.

All doctoral students have access to the ANELIS+ platform. Additionally, they have access to the University library resources. It appears, however, that in some cases students have to resort to personal subscriptions of themselves or of their supervisors to access specific sources.

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.

According to the IER, "*The doctoral school performs the analysis of similarities using a program recognized by CNACTDU (sistemantiplagiat.ro) or may additionally request the use of another program developed at national level on the detection of similarities.*" It is, therefore, unclear whether each doctoral student can have access to the electronic systems of plagiarism checking available at FIMTA.

Recommendations:
1. Allow the doctoral students unconditional access to the electronic systems of plagiarism checking available at FIMTA at all times. Doctoral students should have unrestricted access to these resources; limits on the use may, if absolutely necessary, be imposed.

The indicator is partially 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.

All doctoral students have access to the laboratories and other research facilities for undertaking research activities.

Recommendations: None

The indicator is fulfilled.

Criterion C.3. Internationalization

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

*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.*

FIMTA has concluded Erasmus agreements with 57[5] Universities, 30 of which including mobility at the PhD level. Additionally, FIMTA is an active member of the Implementation Group for the "European Erasmus-Inspired Young Officers Exchange Initiative", also called "Military Ersamus" or "EMILYO" (Exchange of Military Young Officers). According to the IER, 3 PhD students undertook research stays in

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[5] In the IER of the doctoral study programme in Electronic Engineering, Telecommunications and Information Technology "over 60" is mentioned.

Universities abrod, and 13 students attended international scientific conferences in the assessment period.

Recommendations: None

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.

During the assessment period nine academics of European Universities delivered keynote talks at the International Conference on Security for Information Technology and Communications (www.secitc.eu) that is co-organized by "Ferdinand I" Military Technical Academy. These were attended by doctoral students of the programme. In addition, FIMTA itself organized 46 activities (working visits, NATO/ STO working groups, workshops, conferences, seminars and other activities) in which PhD students participated. No doctoral theses were co-supervised in a co-tutelle context within the assessment period.

Recommendations:
1. Exploit the strategic alliances of the programme and of FIMTA with Universities abroad to arrange co-supervision of doctoral theses with academics in such Universities.

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.).

FIMTA actively supports the internationalization of doctoral studies by means of diverse initiatives. A long list of such activities is included in the IER.

Recommendations:
1. Increase the international visibility of the doctoral study programme and enhance its promotion, by e.g. improving the quality of the programme website, and keeping it up-to-date; involving more international experts in the examination committees of the doctoral students; organizing high calibre scientific conferences etc.

The indicator is fulfilled.

IV. SWOT Analysis

Strengths:	Weaknesses:
- Highly satisfied PhD candidates; - Existence of international research collaborations; - Affiliation with a research center of high quality and standing; - Doctoral advisors active in research; - Quality assurance mechanisms in place; - Operational plans for improvement in place.	- Only one doctoral advisor; - Low number of international doctoral students; - Inadequate international promotion of the doctoral study programme; - Little information on the programme is available in the English language; - Restrictions/limitations on the use of the similarity check and plagiarism control services; - Few international experts participate in examination committees of doctoral students;
Opportunities:	Threats:
- Existence of a good number of high quality academic and research institutions active in the domain, to build strategic alliances with; - Participation in the European Doctoral School on the Common Security and Defense Policy.	- Existence of strong academic competitors nationally and internationally; - Unattractiveness of advanced (PhD level) engineering studies.

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	C	A.1.1.1	Fulfilled	Yes
2	C	A.1.1.2	Fulfilled	No
3	C	A.1.2.1	Fulfilled	No
4	C	A.1.2.2	Fulfilled	No
5	C	A.1.3.1	Fulfilled	No
6	*	A.1.3.2	Fulfilled	No
7	*	A.1.3.3	Fulfilled	No
8	C	A.2.1.1	Fulfilled	No
9	C	A.3.1.1	Partially fulfilled	Yes
10	*	A.3.1.2	Partially fulfilled	Yes
11	C	A.3.1.3	Fulfilled	No
12	*	A.3.1.4	Partially fulfilled	Yes
13	C	A.3.2.1	Fulfilled	No
14	*	A.3.2.2	Fulfilled	No
15	*	B.1.1.1	Fulfilled	No
16	*	B.1.2.1	Fulfilled	No
17	C	B.1.2.2	Fulfilled	No
18	C	B.2.1.1	Fulfilled	Yes
19	C	B.2.1.2	Fulfilled	No
20	C	B.2.1.3	Fulfilled	No
21	C	B.2.1.4	Fulfilled	No
22	C	B.2.1.5	Fulfilled	No
23	C	B.3.1.1	Fulfilled	No
24	*	B.3.1.2	Fulfilled	No
25	*	B.3.2.1	Fulfilled	No
26	*	B3.2.2	Not fulfilled	Yes
27	C	C.1.1.1	Fulfilled	No
28	*	C.1.1.2	Partially fulfilled	Yes
29	C	C.2.1.1	Fulfilled	Yes
30	C	C.2.2.1	Fulfilled	No
31	C	C.2.2.2	Partially fulfilled	Yes

32	C	C.2.2.3	Fulfilled	No
33	*	C.3.1.1	Fulfilled	No
34	C	C.3.1.2	Fulfilled	Yes
35	C	C.3.1.3	Fulfilled	Yes

VI. Conclusions and general recommendations

The doctoral study programme in Computer Science and Information Technology is a high quality one, by international standards. Moreover, the programme has potential for further growth and improvement, both in quality and quantity, as the identified strengths can exploit the opportunities to both mitigate the threats and alleviate most of the weaknesses. Nevertheless, some of the weaknesses appear to be of a more structural nature, meaning that they should be considered at the institutional rather than the programme level. Examples are the establishment of English as the working language of the programme and the restrictions/limitations on the use of the similarity check and plagiarism control services. It is expected that the study programme will soon be able to increase the number of qualified doctoral advisors and consequently to fullfill the relevant indicators that are currently only partially fulfilled.

Prof. Sokratis K. Katsikas
24 October 2021

VII. Annexes

Annex I: The detailed schedule of the evaluation visit.
Annex II: Additional information provided in the form of responses to clarification questions posed by the members of the evaluation team
Annex III: Lista sedintelor CSUD din anul universitar 2019-2020

ANNEX I

AGENŢIA ROMÂNĂ DE ASIGURARE A CALITĂŢII ÎN ÎNVĂŢĂMÂNTUL SUPERIOR
Membră în Asociaţia Europeană pentru Asigurarea Calităţii în Învăţământul Superior - ENQA
Înscrisă în Registrul European pentru Asigurarea Calităţii în Învăţământul Superior - EQAR

Nr. 4489 / 02.08.2021

Programul[1] vizitei de evaluare instituţională - IOSUD / domenii de studii universitare de doctorat a
Academiei Tehnice Militare „Ferdinand I” din Bucureşti
The timetable of the institutional evaluation visit - IOSUD / doctoral study domains at the
Military Technical Academy Ferdinand I of Bucharest

Perioada vizitei de evaluare: 13-15.10.2021
The period of the evaluation: 13-15.10.2021

Evaluarea Externă Periodică a IOSUD şi a domeniilor de studii universitare de doctorat
Periodical External Evaluation of the Institution Organising Doctoral Study Programs (IOSUD), and of the doctoral study domains

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanţi/ *Participants*	Observaţii/ *Remarks*
		Miercuri / *Wednesday*, **13.10.2021**	
08:15-09:00	Întâlnire preliminară online pentru pregătirea şi armonizarea etapelor de evaluare, în modul mixt, la nivel de domeniu de doctorat şi IOSUD *Online preliminary meeting for the preparation and harmonization of evaluation steps, in hybrid mode, of doctoral study domain and IOSUD*	- toţi membrii echipei de evaluare *all members of the evaluation team*	**Apăsaţi aici pentru conectare platforma ARACIS ZOOM** *Click here to join ARACIS ZOOM platform* **Meeting ID: 815 2195 8339** **Passcode: 938068**

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[1] În perioada vizitei, pot fi solicitate şi alte întâlniri, pentru eventuale clarificări.
During the visit, other meetings may be requested for possible clarifications.

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
09:15-10:00	Întâlnirea online a comisiei de experți evaluatori cu reprezentanții conducerii universității și ai CSUD *Online meeting with representatives of the institution and of the Council for Academic Doctoral Studies (CSUD)*	- toți membrii echipei de evaluare *all members of the evaluation team* - reprezentanți ai conducerii *representatives of the University management* - reprezentanți ai CSUD și ai școlii doctorale *representatives of the CSUD and of the Doctoral School* - persoane de contact pentru IOSUD și domeniile de doctorat *contact persons for IOSUD and doctoral domains*	↗ **Apăsați aici pentru conectare** *Click here to join*
10:10-11:00	**DD**[2]: Întâlnire online a comisiei de experți evaluatori pentru DD cu responsabilul domeniului de studii universitare de doctorat evaluat și cu echipa care a realizat raportul de evaluare internă	- membrii comisiei de experți evaluatori pentru domeniul de studii de doctorat *evaluation panel members for doctoral study domain*	**DD IM** ↗ **Apăsați aici pentru conectare** *Click here to join*

[2] Pentru toate întâlnirile din program unde se menționează **DD**, se vor organiza două întâlniri, în paralel: una pentru domeniile „Inginerie electronică, telecomunicații și tehnologii informaționale" și „Calculatoare și tehnologia informației"; cealaltă pentru domeniul „Inginerie mecanică".
*For all the meetings where **DD** is mentioned, two meetings will be organized in parallel: one for the doctoral domains "Electronics Engineering, Telecommunications, and Information Technologies" and "Computers and Information Technology"; the other for the doctoral domain of "Mechanical Engineering".*

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
	DD[2]: *Online meeting with the contact person for the doctoral study domain under review and the team responsible for the internal evaluation report*	- responsabilul domeniului de studii de doctorat și echipa care a realizat raportul de evaluare internă *the doctoral study domain contact person and the team responsible for the internal evaluation report*	**DD IETTI & CTI** ➚ **Apăsați aici pentru conectare** *Click here to join*
11:10- 12:00	**DD**: Întâlnire online a comisiei de experți evaluatori cu cadre didactice din domeniul de studii de doctorat evaluat **DD**: *Online meeting with academic staff of the doctoral study domain under review*	- membrii comisiei de experți evaluatori pentru domeniul de studii de doctorat *evaluation panel members for doctoral study domain*	**DD IM** ➚ **Apăsați aici pentru conectare** *Click here to join*
		- cadre didactice din domeniul de studii de doctorat evaluat *academic staff of the doctoral study domain*	**DD IETTI & CTI** ➚ **Apăsați aici pentru conectare** *Click here to join*
12:10- 13:00	Întâlnire online a comisiei de experți evaluatori pentru IOSUD cu directorul CSUD/ directorul școlii doctorale și cu echipa care a realizat raportul de evaluare internă *Online meeting of IOSUD evaluation panel members with the director of CSUD/ director of doctoral school and the team responsible for the internal evaluation report*	- membrii comisiei de experți evaluatori pentru IOSUD *- members of IOSUD evaluation panel* - directorul CSUD și directorul școlii doctorale *the director of CSUD and the director of doctoral school* - membrii echipei care a realizat raportul de evaluare internă *members of the team responsible for the internal evaluation report*	➚ **Apăsați aici pentru conectare** *Click here to join*

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
13.10-14.00	Întâlnire online a comisiei de experți evaluatori pentru IOSUD cu cadre didactice din școala doctorală a IOSUD *Online meeting of IOSUD evaluation panel members with academic staff of the doctoral school*	- membrii comisiei de experți evaluatori pentru IOSUD *- members of IOSUD evaluation panel* - cadre didactice din școala doctorală a IOSUD *academic staff of the doctoral school*	**[Apăsați aici pentru conectare](#)** *Click here to join*
14:00-17.00	Activitate în cadrul comisiilor de evaluare: IOSUD și domenii de studii doctorale/ *Activity within the evaluation panels: IOSUD and doctoral study domains* Respectiv/ *Respectively* Deplasarea reprezentanților echipei de evaluare pentru vizita la fața locului/ *Travel of evaluation panels representatives for the on-site visit*	Comisiile de evaluare pentru IOSUD și pentru domeniile de doctorat *Evaluation panels for IOSUD and doctoral domains*	Se lucrează independent și/ sau în colaborare cu membrii comisiei; platforma ARACIS Ciscowebex/ ZOOM (dacă e cazul) *Independent and/ or collaborative work with other panel members; ARACIS Cisco webex/ ZOOM platform (if the case)*
18:30-19:30	Întâlnire tehnică online, pentru identificarea aspectelor specifice care trebuie clarificate pe parcursul vizitei la fața locului (dacă este cazul) *Online technical meeting to identify specific issues that need to be clarified during the on-site visit (if the case)*	- toți membrii echipei de vizită *all members of the evaluation team*	**[Apăsați aici pentru conectare platforma ARACIS ZOOM](#)** *Click here to join ARACIS ZOOM platform* **Meeting ID: 870 3586 1157** **Passcode: 932417**

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
		Joi / *Thursday*, **14.10.2021**	
08:30-17:00	Reuniuni de lucru față în față[3], vizitarea bazei materiale didactice și de cercetare

Face-to-face working meetings[3], visit of the educational and research infrastructure

Programul va include întâlniri cu: conducerea universității, reprezentanți ai Consiliului CSUD și ai Consiliului școlii doctorale, reprezentanți ai Comisiei de etică, reprezentanți ai universității implicați în asigurarea internă a calității studiilor doctorale, reprezentanți ai centrelor de cercetare din domeniile de doctorat evaluate.
The program will include meetings with: university management, representatives of the CSUD Council and the Doctoral School Council, representatives of the Ethics Commission, university representatives involved in internal quality assurance of doctoral studies, representatives of the research centers in the doctoral domains under review. | - directorul de misiune, coordonatorul comisiei de evaluare a IOSUD, coordonatorii comisiilor de evaluare a domeniilor de doctorat, student evaluator
the director of the evaluation mission, the coordinator of the IOSUD evaluation panel, the coordinators of doctoral domain evaluation panels, student evaluator
- reprezentanți ai universității
university representatives | Vizită la fața locului
On-site visit

De comun acord cu universitatea, întâlnirile de lucru pot fi organizate astfel încât la ele să participe și membrii comisiilor de evaluare ce nu vor fi prezenți la fața locului, dacă aceștia vor considera necesar.
In agreement with the university, the working meetings can be organized so that the members of the evaluation panels who will not be present on site to be able to participate as well, if they deem it necessary. |

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[3] Experții evaluatori la nivelul domeniilor de studii universitare de doctorat pot stabili independent programul vizitei la fața locului, de comun acord cu persoana de contact de la domeniul evaluat și respectând programul întâlnirilor comune cu restul membrilor echipei de evaluare. *The evaluators at doctoral study domain level can independently establish the program of the on-site visit, in agreement with the contact person for the evaluated domain and respecting the schedule of joint meetings with the rest of the evaluation panel members.*

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
		Vineri / *Friday*, 15.10.2021	
08:00-08:40	Întâlnire **tehnică** online, pentru prezentarea celor constatate în cadrul vizitei la fața locului *Online technical meeting to identify specific issues that need to be clarified, if necessary, during the on-site visit*	- toți membrii echipei de evaluare *all members of the evaluation team*	↗ **[Apăsați aici pentru conectare platforma ARACIS ZOOM](#)** *Click here to join ARACIS ZOOM platform* **Meeting ID: 822 6593 3990** **Passcode: 307523**
08:50-09:50	**DD**: Întâlnire online a comisiei de experți evaluatori cu studenții din domeniul de studii de doctorat evaluat **DD**: *Online meeting with students of the doctoral study domain under review*	- membrii comisiei de experți evaluatori pentru domeniul de studii de doctorat *evaluation panel members for doctoral study domain* - studenți din domeniul de studii de doctorat evaluat *students of the doctoral study domain*	**DD IM** ↗ **[Apăsați aici pentru conectare platforma ARACIS ZOOM](#)** *Click here to join ARACIS ZOOM platform* **Meeting ID: 884 7637 6754** **Passcode: 652591** **DD CTI & IETTI** ↗ **[Apăsați aici pentru conectare platforma ARACIS ZOOM](#)** *Click here to join ARACIS ZOOM platform* **Meeting ID: 853 9556 6661** **Passcode: 807469**
09:50-10:50	Întâlnire online a comisiei de experți evaluatori pentru IOSUD cu studenți ai școlii doctorale a IOSUD *Online meeting of IOSUD evaluation panel members with students of the doctoral school*	- membrii comisiei de experți evaluatori pentru IOSUD *- members of IOSUD evaluation panel* - studenți din școala doctorală a IOSUD *students of the doctoral school*	↗ **[Apăsați aici pentru conectare platforma ARACIS ZOOM](#)** *Click here to join ARACIS ZOOM platform* **Meeting ID: 829 9839 9517** **Passcode: 806143**

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
11:00-12:00	**DD**: Întâlnire online a comisiei de experți evaluatori cu absolvenți și angajatori din domeniul de studii de doctorat evaluat ***DD****: Online meeting with graduates and employers of the doctoral study domain under review*	- membrii comisiei de experți evaluatori pentru domeniul de studii de doctorat *evaluation panel members for doctoral study domain* - absolvenți și angajatori din domeniul de studii de doctorat evaluat *graduates and employers of the doctoral study domain*	**DD IM** ➹ **Apăsați aici pentru conectare** *Click here to join* **DD IETTI & CTI** ➹ **Apăsați aici pentru conectare** *Click here to join*
12:10-13:10	Întâlnire online a comisiei de experți evaluatori pentru IOSUD cu absolvenți și cu angajatori *Online meeting of IOSUD evaluation panel members with graduates and employers*	- membrii comisiei de experți evaluatori pentru IOSUD *- members of IOSUD evaluation panel* - absolvenți și angajatori *graduates and employers*	➹ **Apăsați aici pentru conectare** *Click here to join*
13:10-15:40	Finalizarea documentelor *Completion of the evaluation documents*	Comisiile de evaluare pentru IOSUD și pentru domeniile de doctorat *Evaluation panels for IOSUD and doctoral domains*	Se lucrează independent și/ sau în colaborare cu membrii comisiei. *Independent and/ or collaborative work with other panel members.*
15:50-16:30	Întâlnire online pentru **concluzii** *Online meeting for conclusions*	- toți membrii echipei de evaluare *all members of the evaluation team*	➹ **Apăsați aici pentru conectare platforma ARACIS ZOOM** *Click here to join ARACIS ZOOM platform* **Meeting ID: 842 6970 0165** **Passcode: 472889**
16:30-17:30	Întâlnire **finală** online în vederea prezentării principalelor constatări rezultate în urma evaluării la nivel de domenii de doctorat și IOSUD și a recomandărilor de îmbunătățire a calității	- toți membrii echipei de evaluare *all members of the evaluation team* - reprezentanții universității *university representatives*	➹ **Apăsați aici pentru conectare** *Click here to join*

Data/ ora Date/ hour (Bucharest time)	Activitate/ *Activity*	Participanți/ *Participants*	Observații/ *Remarks*
	Meeting with representatives of the institution under review to discuss on the conclusions of the evaluation process and the main reccomandations		

Prof. univ. dr. Simona LACHE

Director de misiune

Gl. bg. prof. univ. dr. ing. Constantin VIZITIU

Comandant (Rector)

ANNEX II

Answer to Clarifications

1. At the beginning of the Internal Evaluation Report there are links which do not work, for example those from pg. 7, 9, 10 and others. Please make all of them functional.

This issue was solved in the previous e-mail message that contains the updated version of the internal evaluation report.

2. P. 33, indicator A.1.1.1b: Please provide information on how the student representative to the CSUD was appointed.

The student representative to the CSUD (Mr. Mihai UNGUREANU) was appointed after the general elections in 2020 (see *Annex S.01*).

3. Please present the Contract for doctoral studies in case of budget places.

Annex S.02 includes both types of contracts: for students places financed from the state budget and fee-paying student places.

4. Please present at least a part of the Excel data base which contains the records of the doctoral students and their backround.

Annex S.03 contains an excerpt of the Excel database with the records of doctoral students enrolled to Computer Science and Information Technology doctoral study domain. All these students graduated from the "Ferdinand I" Military Technical Academy.

5. P. 34, indicator A.1.1.e: The statement "CSD members of IOSUD-FIMTA hold meetings whenever necessary" does not constitute "proof of the regularity of the calling of meetings", as the INDICATOR stipulates. Please give a list of meetings held in the academic year 2019-2020 and a sample of minutes of such meetings.

The list of the CSUD meetings for the academic year 2019-2020 is presented in *Annex S.04* whereas *Annex S.05* contains samples of these meetings.

6. P. 35, indicator A.1.1.1.g: Insufficient information is provided on how "proposals regarding the training program" are analyzed and approved; only information on how the exams are conducted is given. Please provide information on how e.g. proposals for new courses are handled and evidence of the application of pertinent procedures, if applicable.

The training programs are analyzed by the Council for Doctoral Studies (CSD). The training programs are generally valid, but are individualized for each PhD student with a focus on the research topics of interest. For example, in Advanced Cryptography course, if the doctoral topic refers to cloud security, homomorphic cryptography subjects are addressed.

7. P. 36, indicator A.1.2.1: Please explain how the "assessment of student academic performance" is being tracked by the described system. Is it (only) by means of tracking the year of registration and the stage of preparation?

The results of the PhD students are recorded in the Excel database. Regular meetings (monthly) are scheduled of each PhD student with the supervisor and the supervisory committee to review the progress and to provide guidance.

8. P.38, indicator A.1.3.1: Presumably the students shown in Table III.A.1.3.2 (on p. 39) have participated in the research projects (1)-(3). Please provide details on which students participate(d) in projects (4)-(7).

Table below contains the requested information.

Nr. crt.	Program/Nr.contract/An	Denumire temă de cercetare științifică	Nume, prenume doctorand implicat
4	PN-III CF 26SOL/2020	Strategia participării naționale în noul context european de coordonare a cercetării în domeniile industriei de securitate și spațiu	-
5	PNIII CF 25SOL/2020	Dezvoltarea de Tehnologii și Sisteme de Diagnostic Local și la Distanta Eficiente al Infectării cu Virusul SARS-COV-2 (CovShield)	Aciobanitei Iulian Grumazescu Constantin
6	PNIII CF 54PTE/2016	Mecanisme criptografice in cloud sub controlul exclusiv al utilizatorului (MC3Ex)	Grumazescu Constantin Gurzau Florina Apostol Ioana Ghimes Ana-Maria Aciobanitei Iulian Subasu Georgiana Rosu Livia Lupascu Cristian
7	PNII CF 19/2012	Advanced Models of Design and Evaluation of Modern Cryptographic Systems (ADECS)	Constantin Grumazescu Chifor Bogdan

9. Table III.A.1.3.3 shows that the ammounts collected from the budget during the period 2016-2020 was 0. It means there were not doctoral students admitted on budget places? On the other hand, at indicator B.1.1.1 it is mentioned that 3 students were admitted on budget places.

The way "Ferdinand I" Military Technical Academy is financed is a little bit different from the civilian universities. We do not receive funds from the Ministry of Education for each student admitted on budget places but form the Ministry of Defense based on other criteria. Budget places can be occupied only by the personnel working for the Ministry of Defense (engineer officers) that receive a salary during the doctoral studies. This is the reason Table III.A.1.3.3 includes zero amounts for this category.

10. Indicator A.2.1.1: please present the list containing the specific research infrastructure acquired in the last 5 years (the mentioned value is 5 800 000 lei).

Annex S.06 offers details regarding the research infrastructure developed by the Faculty of Information Systems and Cyber Security in the last 5 years. This infrastructure will be presented in details during the onsite visit.

11. P. 46, indicator B.1.1.1: Information is provided only for "the ratio between the number of candidates in the last five years and the number of positions financed from the state budget put up for competition in the field of doctoral studies". Please provide information on "the ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in the last 5 years and the number of positions financed from the state budget put up for competition in the field of doctoral studies"

As mentioned before, budget places can be occupied only by the personnel working for the Ministry of Defense (engineer officers) who received the approval to enroll in a doctoral study program. Candidates from other higher education institutions can occupy fee-paying places only. Examples of such students are:

1. Pătrașcu Alexandru, graduate of the Politehnica University of Bucharest
2. Velea Radu, graduate of the Politehnica University of Bucharest

12. Indicator B.1.2.1: please present the document containing the admission criteria for the doctoral studies and their weights in the final score.

The admission criteria for doctoral studies are specified in the "Regulations for the organization and conduct of doctoral studies" published on the university web site for each academic year (see https://mta.ro/admitere-doctorat).

13. P. 47, Indicator B.1.2.1: Please provide information on the admission rate. ???

The admission rate for the last 3 years is presented in the following table.

Academic year	No. of places	No. of candidates	Admission rate
2020	2	1	50%
2019	2	2	100%
2018	4	4	100%

14. P. 51, indicator C.1.1.1: Information is provided on the aims of the evaluation and internal quality assurance on item (c), but not on specific procedures in place for achieving these aims. Further, insufficient information is provided on such procedures for items (e) and (f). Please provide pointers to such procedures, possibly as part of more generic regulations.

In addition to the documents mentioned in internal evaluation report that establish the framework for quality management, an extensive set of methodologies, regulations and procedures have been developed to support this process. Specifically, regarding doctoral studies, the following regulations are in place:

- Regulations for the organization and development of doctoral university study programs (https://mta.ro/wp-content/uploads/2019/08/Reg-org-si-desf-programe-doctorat-2017-min.pdf)
- Regulation for the organization and conduct of the process for obtaining habilitation certificate (https://mta.ro/wp-content/uploads/2021/02/Regulament-abilitare_07_01_2021-Site-min.pdf)
- Methodology regarding the evaluation of the activity of doctoral supervisors (https://mta.ro/wp-content/uploads/2019/08/Metodologie-evaluare-conducatori-doctorat-min.pdf)
- Regulation regarding the defense of doctoral theses (https://mta.ro/wp-content/uploads/2021/02/Regulament-sustinere-teza-doctorat-min.pdf)

15. P. 55, indicator C.1.1.2: Meetings with the doctoral students are mentioned as the feedback mechanism. Please provide details on meetings held in 2019-2020, samples of minutes of such meetings (possibly also of earlier academic years), and examples of student feedback that resulted in action, along with evidence of the action taken.

The PhD supervisor and the supervisory committee meet regularly (monthly) with the PhD student to review the progress, to receive feedback and to provide guidance. Unfortunately, we have not recorded any minutes for these meetings.

16. P. 59, indicator C.3.1.1: In order to substantiate the claim that "At least 35% of PhD students have completed a training course abroad or another form of mobility such as participating in international scientific conferences.", please provide a table indicating *who* went *where* to do *what*, *when*, for the students in this doctoral domain.

The PhD students that have completed a training course abroad or attended in international scientific conferences in the last 5 years are:
1. Velciu Marius Alexandru
   - 11th International Symposium on Applied Computational Intelligence and Informatics (SACI), Timișoara, Romania, 2016
2. Velea Radu
   - 21th International Conference on Control Systems and Computer Science (CSCS), Bucharest, Romania, 2017
3. Chifor Bogdan
   - 9th International Conference on Electronics, Computers and Artificial Inteligence (ECAI), Targoviste, Romania, 2017
4. Păuna Adrian
   - 12th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2018
5. Grumăzescu Constantin
   - 10th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Iasi, Romania, 2018
6. Vlăduță Valentin-Alexandru
   - 10th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Iasi, Romania, 2018
7. Aciobăniței Iulian

- 15th International Joint Conference on e-Business and Telecommunications – Volume 1: SECRYPT, Porto, Portugal, 2018
- 12th International Symposium on Applied Computational Intelligence and Informatics (SACI), Timisoara, Romania, 2018
- 13th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2020

8. Ghimeș Ana-Maria
- 9th International Conference on Electronics, Computers and Artificial Inteligence (ECAI), Targoviste, Romania, 2017
- 11th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2016

9. Apostol Ioana
- 12th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2028
- 13th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2020

10. Preda Marius
- 13th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2020
- 12th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Pitesti, Romania, 2020

11. Lupașcu Cristian
- 22nd International Conference on Control Systems and Computer Science (CSCS), Bucharest, Romania, 2019

12. Nilă Constantin
- 13th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2020
- 12th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Pitesti, Romania, 2020

13. Matei Ioana
- 22nd International Conference on Control Systems and Computer Science (CSCS), Bucharest, Romania, 2019
- 13th IEEE International Conference on Communications (COMM), Bucharest, Romania, 2020

In addition to the above mentioned information, the following PhD students participated to research stages in universities from abroad, during the doctoral studies:

1. Vlăduță Valentin-Alexandru, Univ Aix Marseille, Franța, 2017.
2. Aciobăniței Iulian, ENSTA ParisTech, Franța, 2016.
3. Grumăzescu Constantin, Royal Military Academy, Belgia, 2012.

17. P. 60, indicator C.3.1.2: Please provide a table indicating *who* came from *where* to do *what*, *when* for courses/lectures delivered to the doctoral students in this doctoral domain.

PhD students were invited and participated to the keynote speakers presentations at the International Conference on Security for Information Technology and Communications (www.secitc.eu) organized by "Ferdinand I" Military Technical Academy, Bucharest University of Economic Studies and Advanced Technologies Institute. The list of keynote speakers for the last three editions of the conference includes:

- Gerhard Petrus Hancke, Associate Professor with the Department of Computer Science at City University of Hong Kong (2020)
- Rémi Géraud-Stewart, Cryptologist and security researcher, member of the Ecole Normale Supérieure's Information Security Group (2020)
- Constantin Catalin Dragan, Assistant Professor (lecturer) in Secure Systems at the University of Surrey, United Kingdom (2020)
- Traian MUNTEAN, Honorary Professor of Computer Science, Aix-Marseille University-France (2019)
- Marc Joye, Research Scientist, OneSpan (2019)
- Peter Roenne, Applied Security and Information Assurance Group (APSIA) (2019)
- Paolo D'Arco, Associate Professor, University of Salerno (2018)
- Jean-François Lalande, Associate Professor, IRISA Laboratory (2018)
- Denis Baheux, Institut de Recherche Criminelle de la Gendarmerie Nationale (IRCGN) (2018)

In addition to this list, Professor David Naccache from the École Normale Supérieure presented lectures for the PhD students in 2017 when he received Doctor Honoris Causa title from the "Ferdinand I" Military Technical Academy.

18. P. 61, indicator C.3.1.3: Please provide a table showing teaching staff from abroad that have guided/guide doctoral students, and in what capacity (have been or are part of commisions for the guidance and defense of theses or guided the doctoral students during their international internships).

There are no such cases besides the ones presented in the answer to previous question.

ANNEX III

Lista sedintelor CSUD din anul universitar 2019-2020

1	Ședinta CSUD 07.01.2019	1. Aprobarea comisiei de susținere publică a tezei de doctorat 2.Propunerea de renunțare la calitatea de conducător de doctorat a domnului prof.univ.dr.ing. Dragoș COSTACHE și a domnului prof.univ.dr.ing. Mihai RADU
2	Ședinta CSUD 18.01.2019	Modificare Sarcina didactică
3	Ședinta CSUD 06.02.2019	1. Stabilirea numărului maxim de studenți doctoranzi care pot fi îndrumați de către un conducător de doctorat conform legii 1/2011 2. Aprobarea planurilor de pregătire individuală pe anul 2019 3. Aprobarea raportului "Dare de seamă „ 4.Validare raportului privind studiile universitare de doctorat
4	Ședinta CSUD 19.02.2019	1. Validarea comisiei de susținere a publică a tezei de doctorat 2. Validarea Regulamentului de organizare și desfășurare a concursului de admitere la studii univeritare de doctorat 3. Validarea numărului de locuri aprobate pentru domenii de doctorat și conducători de doctorat 4. Propunere modificare Sarcină didactică
5	Ședinta CSUD 28.02.2019	1. Validarea comisiei de susținere a publică a tezei de doctorat 2. Aprobare acordare perioada grație
6	Ședinta CSUD 13.03.2019	Discutarea rapoartelor de evaluare interna
7	Ședinta CSUD 27.03.2019	1. Validare rapoartelor de evaluare interna 2. Acordare perioadă prelungire 3. Măsuri privind pregătirea admiterii, sesiunea septembrie 2019
8	Ședinta CSUD 09.04.2019	1. Aprobarea programelor individuale de cercetare științifică 2. Propunere modificare Sarcină didactică
9	Ședinta CSUD 10.06.2019	1. Validarea comisiei de susținere a publică a tezei de doctorat 2. Aprobare acordare perioada grație
10	Ședinta CSUD 25.06.2019	Validarea comisiei de susținere a publică a tezei de doctorat
11	Ședinta CSUD 24.07.2019	Validarea comisiei de susținere a publică a tezei

12	Ședinta CSUD 22.08.2019	1. Acordare perioadă prelungire 2. Validarea comisiei de susținere a publică a tezei
13	Ședinta CSUD 09.09.2019	1. Aprobarea cererii studentei doctorand Bal de renunțare la calitatea de doctorand 2. Validarea comisiei de susținere a publică a tezei
14	Ședinta CSUD 18.09.2019	1. Aprobare sarcina didactică 2. Aprobare acordare transfer la taxa 3. Aprobare acordare prelungire
15	Ședinta CSUD 24.09.2019	1. Aprobare rezultate concurs admitere 2. Aprobare acordare transfer la taxa 3. Aprobare acordare prelungire 4. Aprobare acordare gratie
16	Ședinta CSUD 30.09.2019	1. Aprobare acordare prelungire 2. Aprobarea și validarea solicitării studentului de schimare a programului individual de cercetare științifică
17	Ședinta CSUD 07.10.2019	1. Aprobare acordare prelungire 2. Aprobare acordare gratie 3. Aprobarea schimbării unui student doctorand din Consiliu pentru Studii Universitare de doctorat 4. Aprobarea modificării art.X.3 din Regulamentul de organizare și desfășurare a programelor de studii universitare de doctorat 5. Prezentarea rapoartelor personale de retragere de la studii universitare de doctorat 6. Aprobarea scoaterii din evidența Școlii doctorale a doctoranzilor care nu și-au îndeplinit obligațiile stabilite prin contractul de studii universitare de doctorat
18	Ședinta CSUD 29.10.2019	Validare programe de pregătire bazate pe studii universitare de doctorat
19	Ședinta CSUD 11.11.2019	Validare Raport privind studiile universitare de doctorat
20	Ședinta CSUD 03.12.2019	1.Aprobare acordare prelungire 2. Validarea comisiei de susținere a publică a tezei
21	Ședinta CSUD 12.12.2019	Validarea comisiei de susținere a publică a tezei
22	Ședinta CSUD 24.03.2020	1.Aprobarea programelor individuale de cercetare științifică; 2.Propunerea de modificare a sarcinii didactice a Școlii doctorale 3.Aprobarea temelor de cercetare pentru admiterea la studii universitare de doctorat sesiunea septembrie 2020 4.Aprobarea comisiei de susținere publică a tezei de doctorat

		5.Aprobare acordare prelungire
23	Ședinta CSUD 22.05.2020	Analizarea si avizarea Metodologiei de organizare și desfășurare a activităților on-line în școala doctorală "Inginerie sistemelor de apărare și securitate" - pe durata stării de urgență/alertă și până la eliminarea restricțiilor privind adunările publicede către autoritățile de resort
24	Ședinta CSUD 12.06.2020	1. Validarea comisiei de susținere publică a tezei de doctorat 2. Validarea temelor de cercetare pentru admiterea la studii universitare de doctorat sesiunea septembrie 2020
25	Ședinta CSUD 02.07.2020	1. Validarea temelor de cercetare pentru admiterea la studii universitare de doctorat sesiunea septembrie 2020 2. Aprobare acordare prelungire
26	Ședinta CSUD 23.09.2020	1.Aprobare acordare transfer la taxa 2. Aprobare acordare prelungire 3. Aprobare acordare gratie 4. Analizarea solicitării de transfer de la Școala Doctorală de la Universitatea din Oradea la Academia tehnică Militară "Ferdinand I", a domnului profesor Popențiu Vlădicescu Florin. 5. Analizarea și aprobarea Sarcinii didactice a personalului didactic și asociat la Școala doctorală;
27	Ședinta CSUD 05.10.2020	1.Aprobare acordare transfer la taxa 2. Aprobare acordare prelungire 3. Aprobare acordare gratie 4. Analizarea și aprobarea de scoatere din evidența Școlii doctorale a doctoranzilor care nu și-au îndeplinit obligațiile stabilite pe parcursul derulării ciclului de studii universitare de doctorat. 5. Analizarea și aprobarea Sarcinii didactice a personalului didactic și asociat la Școala doctorală;
28	Ședinta CSUD 03.11.2020	1.Analizarea și validarea Programelor de pregătire bazate pe studii universitare avansate pentru studenții doctoranzi înmatriculați în anul universitar 2020-2021 2. Analizarea și validarea Raportului anual privind studiile universitare de doctorat din Academia Tehnică Militară "Ferdinand I"
29	Ședinta CSUD 16.12.2020	Aprobare acordare prelungire