

## **The External Evaluation Report of a Doctoral Study Domain**

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### **I. Introduction<sup>1</sup>**

This report was drafted during the evaluation of the doctoral studies field SYSTEMS ENGINEERING within the "DUNAREA DE JOS" UNIVERSITY OF GALATI. The audiences took place between 12 and 16 July 2021, and the composition of the commission of evaluators was:

- Prof.dr.ing. Horia Ciocârlie – Universitatea Politehnica din Timișoara;
- Prof.dr.ing. Ramon Vilanova Arbos – Universitat Autònoma de Barcelona;
- Drd.ing. Florina-Luminița Besnea – Universitatea din Craiova.

In 2012 within „Dunărea de Jos” University of Galați, it was decided that the doctoral studies to be organized in two schools for doctoral studies: the School for Doctoral Studies in Engineering and the School for Doctoral Studies in Socio-Humanities. Subsequently, in 2017, the reorganization of the School for Doctoral Studies in Engineering is made, by dividing it into two schools: the School for Doctoral Studies in Fundamental and Engineering Sciences (SDSFI) and the School for Doctoral Studies in Mechanical and Industrial Engineering. The field of study Systems Engineering was part of the School for Doctoral Studies in Engineering between 2012-2017, and starting with 2017, it is part of SDSFI.

SDSFI, as part of IOSUD – UDJG, carries out doctoral studies for the following fields:

- Committee 4 – CNATDCU – CHEMISTRY, doctoral field of study Chemistry
- Committee 7 – CNATDCU - MATERIALS ENGINEERING, doctoral field of study MATERIAL ENGINEERING
- Committee 9 – CNATDCU – ELECTRICAL ENGINEERING, doctoral field of study Electrical Engineering
- Committee 14 – CNATDCU – PLANT AND ANIMAL RESOURCES ENGINEERING, doctoral fields of study: Food products engineering, Biotechnologies, Engineering and management in agriculture and rural development.
- Committee 15 – CNATDCU – COMPUTERS, INFORMATION TECHNOLOGY AND SYSTEMS ENGINEERING, doctoral fields of study: Computers and Information Technology, Systems Engineering.

Within SDSFI, there are currently 35 doctoral supervisors, either postholders or associated and 994 doctoral students enrolled: 66 students in stage – distributed as follows: 61 students financed from the state budget and 5 students with tuition fee – 28 students find themselves in extension, grace and break period. Between 2015-2020, 45 students received the title of doctor, all the doctoral thesis presented being validated by CNATDCU specialized committees.

According to the internal evaluation report, the SDSFI mission within IOSUD-UDJG is: the implementation and development of the activity of doctoral education, based on an in-depth scientific research stage in the accredited scientific

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<sup>1</sup> Each time when applicable the information shall be presented gender-wise.



fields of study within „Dunărea de Jos” University of Galați, in order to train the human resource in fundamental and engineering sciences as experts prepared in their field of expertise, being able to develop innovative solutions, necessary to the progress of the society

In compliance with the internal evaluation report, the field of study Systems Engineering within SDSFI has as mission the implementation and development of the activity of doctoral education in order to train highly qualified human resource within a top field of engineering sciences. This mission is accomplished by:

- Expertise in the field – Acquiring knowledge specific to the field, through intensive study of specific disciplines in the training program and valuable scientific articles in the field
- Authentic research – Development of new, innovative and authentic ideas and solutions, the approach of research themes in compliance with the current stage in the field, the validation of theoretical ideas through experimental research
- Presentation of research results – Development of the ability to present clearly and reasonably new ideas and concepts and the results of research conducted thereafter by developing valuable scientific articles published in journals with international visibility or in international conferences included in the calendar of recognized IFAC / IEEE bodies and, finally, by elaborating the doctoral thesis

The objectives of the doctoral field of study Systems Engineering within SDSFI are:

- Capitalization of human resource and the existent research infrastructure in the field in order to train new and highly qualified human resources;
- Continuous increase of the scientific, economic and social impact of doctoral studies and doctoral stages' results;
- Increase of the internal and international visibility by publishing the obtained results and also development of new partnerships.

Within the doctoral field of study Systems Engineering, 5 doctoral supervisors carry out their activity, 3 of them being postholders within our institution and 2 associated supervisors. At the moment of visit, within the evaluated field of study, there are 10 doctoral students, of which 7 in stage and 3 in extension period. In the evaluated period, 2016-2020, there were 6 doctoral thesis publicly presented, all of them being validated by CNATDCU specialized committees.

## II. Methods used

In the external evaluation process, before, and during the evaluation visit, the following methods and tools were used:

- Analysis of the Report of internal evaluation of the field of doctoral university studies evaluated and its annexes;
- Analysis of documents, data and information available on the IOSUD / School / Schools website Doctorates, in electronic format;
- Visit to buildings from the institution's patrimony, which include:
  - classrooms;
  - laboratories;
  - the institution's library;
  - research centers;
  - reading rooms for students;
- Meeting / online discussions with doctoral students in the field of evaluated doctoral university studies;
- Meeting / online discussions with graduates in the field of evaluated doctoral university studies;
- Meeting / online discussions with employers of graduates in the field of doctoral studies evaluated;
- Online meeting / discussions with the management of the Doctoral School in which the field of evaluated doctoral university studies operates;
- Online meeting / discussions with doctoral supervisors in the field of evaluated doctoral university studies;
- Online meeting / discussions with the person in charge of the evaluated doctoral university field and with the team that made the internal evaluation report;
- Online meeting / discussions with directors / managers / research laboratories related to the field of doctoral studies;
- Meeting / discussions with representatives of the various structures of IOSUD / School / Schools Doctoral degrees in which the evaluated doctoral university field of work operates:



- The Doctoral School Council, the University Senate, the Board of Directors, the Evaluation and Quality Assurance Commission, the Quality Assurance Department, the Ethics Commission (including with the students representing these structures);
- Career Counseling and Guidance Center;
- student organizations;
- Application of questionnaires to doctoral students in the field of evaluated doctoral university studies.

### **III. Analysis of ARACIS's performance indicators**

#### **Domain A. INSTITUTIONAL CAPACITY**

IOSUD from the "Dunarea de Jos" University of Galați and the Doctoral School in Fundamental and Engineering Studies included in this IOSUD, prove a good institutional capacity, which allows the development of doctoral studies in appropriate quality conditions.

#### **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.*

IOSUD within the "Dunarea de Jos" University of Galați has approved and implemented the regulations provided in the specific legislation regarding 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.*

The implementation of internal regulations is accomplished satisfactorily. The institution provided the necessary documents and proofs of such implementation. The organisation has reached an appropriate level of maturity.



*Recommendations:* Some pages of the site devoted to doctoral studies are found only in Romanian. No English version. Should be translated (for the admission of doctoral students, for the completion of doctoral studies).

***The indicator is fulfilled***

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

Documentary proof is provided of the criteria, procedures and standards.

*Recommendations:* The SD-SFI regulation is in rumanian. English translation is recommended to be made available.

***The indicator is fulfilled***

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

IOSUD within the "Dunarea de Jos" University of Galați has availability of the necessary software resources to support and carry out the doctoral studies in appropriate conditions.

***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.*

Electronic platforms provided by UDJG are used. The system is observed as complete and effective

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

All PhD supervisors from SD-SFI has access to the SISTEMANTIPLAGIAT.RO which is an acknowledged platform for plagiarism detection. Evidence of it use are provided.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

IOSUD from the “Dunarea de Jos” University of Galați ensures that globally the financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented by additional funding to that provided by the government.

***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.*

A total of 6 research grants were identified in the period 2015 - 2020. Complete information regarding its use, field of application and owner of the grant is provided.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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%.*

A total of 6 students are currently under project grants. Full list of projects with identification with grants provided are listed. The proportion of additional funding is  $(6/10) \cdot 100 = 60\%$ . Therefore, above the 20% threshold.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***The indicator is fulfilled***

***Performance Indicator \*A.1.3.3.<sup>2</sup>*** *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.).*

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<sup>2</sup> 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.



A balance of the amount used to reimburse professional training expenses of doctoral students is provided. The proportion of the Systems Engineering field is 11.02 %. Therefore, above the 10% threshold.

*Recommendations:* Even if this indicator is fulfilled, some additional information regarding how it spreads over the total doctoral students could provide a more global idea.

***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.*

The Doctoral School in Fundamental and Engineering Studies from the "Dunarea de Jos" University of Galați has a very good quality research infrastructure that can properly support the activities specific to doctoral university studies.

**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.*

Material and workspaces are aligned with the objectives of the doctoral domain. Web sites for research groups with lists of equipment are provided that allow to explore the available equipment.

*Recommendations:* Annexes provided with the description of material and infrastructure equipment is provide din rumanian. For next occasions, those aspects should be better provided also in English.

***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.*

The Doctoral School in Fundamental and Engineering Studies from the "Dunarea de Jos" University of Galați has qualified staff to conduct the doctoral university studies.

**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.*

All the 5 PhD supervisors meet the criteria.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***The indicator is fulfilled***

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



Employee certificates are presented for all full-time PhD supervisors. At the IS domain, there are 5 advisors, 2 of them are associated advisors. This provides a percentage of 60% of advisors with full-time employment. Therefore, above the 10% threshold.

*Recommendations:* Young researchers are encouraged to obtain the habilitation ensuring the domain sustainability.

***The indicator is fulfilled***

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

It is verified that 100% of the studies of the doctoral domain are taught by experts of the required level.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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<sup>3</sup> does not exceed 20%.*

There are no cases of PhD supervisors that coordinates more than 8 PhD students.

*Recommendations:* No recommendations are issued.

***The indicator is fulfilled***

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

Doctoral School in Fundamental and Engineering Studies from the “Dunarea de Jos” University of Galați has doctoral advisors with an internationally visible scientific activity.

***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*

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<sup>3</sup> 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.



*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.*

PhD supervisors in the field show a very good record of publications and international research recognition. All of them meet the threshold.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

All of the PhD advisors provide the required level.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***The indicator is fulfilled***



## **Domain B. EDUCATIONAL EFFECTIVENESS**

IOSUD from the “Dunarea de Jos” University of Galați and the Doctoral School in Fundamental and Engineering Studies included in this IOSUD, prove a good educational effectiveness, which allows the development of doctoral studies in appropriate quality conditions.

### **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.*

IOSUD from the “Dunarea de Jos” University of Galați and the Doctoral School in Fundamental and Engineering Studies included in this IOSUD prove, in the Systems engineering domain, they can attract doctoral candidates from outside the institutions.

**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.*

The ratio is  $4/8=0,5$  which is above the 0,2 threshold.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

#### **The indicator is fulfilled**

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

IOSUD from the “Dunarea de Jos” University of Galați and the Doctoral School in Fundamental and Engineering Studies prove the Systems Engineering admitted candidates demonstrate good academic and professional level.

**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.*

The admission methodology includes the stated criteria and procedures.



*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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<sup>4</sup> does not exceed 30%.*

From the provided data at the report the abandon / dropout rate for PhD students in the Systems Engineering domain is 0.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

The training program based on advanced university studies in the field of Systems Engineering is adequate to improve the research skills of doctoral students 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.*

The curriculum contains 3 mandatory courses (with a total of 20 ECTS) for the preparation of doctoral students in scientific research: Academic writing for the fields of technical sciences and research project management, English for scientific and engineering purposes and Scientific research ethics and academic integrity. Also, there are 6 optional courses for a PhD student to have a total of 30 ECTS.

*Recommendations:* Some additional courses with topic related to Systems Engineering would be useful for the PhD Students.

***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 course *Scientific research ethics and academic integrity* (5 ECTS) is offered. The discipline is explicitly covered.

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<sup>4</sup> 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:* Indicator accomplished satisfactorily. No recommendations are issued.

***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<sup>5</sup>.*

The requested mechanisms to ensure the academic program addresses the stated academic objectives are in place. They are based on the existing SD-SFI quality assurance / feedback mechanism.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

The information provided is in terms of official meetings records and administrative evidence. A more detailed evidence would be useful.

*Recommendations:* It is requested that guidance feedback in forms of PhD student report should be provided.

***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 ration provided in the report is 10:12=0.83:1, so the threshold is not exceeded in any case.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***The indicator is fulfilled.***

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

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<sup>5</sup> 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.



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

In the case of the field of Systems Engineering within the “Dunarea de Jos” University of Galați, the research is capitalized by doctoral students through presentations at scientific conferences and scientific publications.

***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.*

For each of the 6 PhD students who have obtained the title of doctor in the field of doctoral studies in Systems Engineering in the last five years and whose title has been validated by CNATDCU, one article has been selected. Research that is reflected in the papers can be considered relevant.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

The provided proofs of presentations conducted by PhD students during the period of evaluation shows the ratio is at least 1 for each student and above 1 in global average. A total of about 9 presentations are listed, for the 6 doctoral students who completed their doctoral studies in the period 2016-2020.

*Recommendations:* Should be mandatory for the PhD students to have at least one presentation during the doctoral studies.

***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.*

The Doctoral School in Fundamental and Engineering Studies appeals for the field of Systems Engineering to a significant number of external scientific references in the commissions for public defense of doctoral theses for the analyzed field.



**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.*

The list of 6 theses defended by PhD students in the field of Systems Engineering in the period 2016-2020 is provided. This is a complete information regarding all the conducted PhDs and no cases of exceeding the threshold of 2 are recorded.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

**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.*

There are only 6 theses defended by PhD students in the field of Systems Engineering.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

**The indicator is fulfilled**



## **Domain C. QUALITY MANAGEMENT**

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

IOSUD from the “Dunarea de Jos” University of Galați and the Doctoral School in Fundamental and Engineering Studies included in this IOSUD, generally prove a good quality management, which allows the development of doctoral studies in appropriate quality conditions. An improvement in the degree of internationalization is needed.

*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 Doctoral School in Fundamental and Engineering Studies has the institutional framework created for internal quality assurance, but measures are needed for its effective application.

**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.*

SD-SFI has procedures that covers all required axes of analysis: a) the scientific activity of PhD supervisors; b) the infrastructure and logistics necessary to the research activity; c) the subsequent procedures and norms on the basis of which the doctoral studies are organized; d) the scientific activity of PhD students; e) the training program is based on advanced university studies of PhD students.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*



Feedback mechanisms are implemented to get feedback from doctoral students based on the Operational Procedure for the evaluation of doctoral supervisors by the doctoral students. The processing of the questionnaires of evaluation of the study programs by the doctoral students is provided.

*Recommendations:* The action plan resulted from the feedback from doctoral students should be presented to all the students.

***The indicator is partially fulfilled.***

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

The Doctoral School in Fundamental and Engineering Studies proves transparency in the presentation of information and accessibility to learning resources.

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

In the case of Systems Engineering within the Doctoral School in Fundamental and Engineering Studies, the information of interest for doctoral students, future candidates, respectively the information of public interest are available for consultation in electronic format.

***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.*

Links to websites with the information published are provided. The main website is the one of the IOSUD which has also an english version: <https://www.en.ugal.ro/education/study-programmes/doctoral-studies>.

*Recommendations:* Ensure all relevant pages can also be found in english. If they are supposed to also attract students from abroad, potential candidates should find the information in english.

***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.*

In the case of Systems Engineering, within the Doctoral School in Fundamental and Engineering Studies, provides the necessary resources for conducting the 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.***

Different platforms are provided for accessing academic databases. UDJG benefits through the national ANELIS Plus 2020 Project from online access to electronic scientific resources.

No comments on access to other platforms such as IEEEXplore.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued

***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.***

PhD students have access to SISTEMANTIPLAGIAT.RO.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***The indicator is fulfilled.***

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

All PhD students have permanent access to the research laboratories available to SD-SFI. In the case of shared resources or limited, access is planned by prior appointment.

*Recommendations:* Indicator accomplished satisfactorily. No recommendations are issued.

***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.*

Within the Doctoral School in Fundamental and Engineering Studies, it is necessary to adopt an internationalization plan with clear and specific measures that will be part of the mission 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.*

Two different kinds of mobilities are identified: a) internship or stays at other institutions, and b) stages abroad because of attending scientific events. The ratio is 38%, so the 20% threshold is reached. However, there is a clear need for increasing the internships abroad.

*Recommendations:* It is recommended to increase the opportunities for funding training internships abroad. A higher percentage of students (if not all) should at some time, conduct such internship.

***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.*

First-rate experts to give lectures for doctoral students are invited due the involvement of the PhD advisors in organizing the ICSTCC conference.

*Recommendations:* It is recommended to better promote co-supervised PhDs.

***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.).*

IOSUD UDJG has participated to some educational fairs. Two international students from Republic of Moldavia are recorded. There is the need for a clear and specific internationalization plan. Concrete measures should be established. They should be part of the doctoral studies mission and not left to particular contacts of PhD supervisors.

*Recommendations:* SD-SFI should encourage the PhD advisors to include international experts in the guidance and public defending commissions.

***The indicator is fulfilled.***



## IV. SWOT Analysis

<p><b><u>Strengths:</u></b></p> <ul style="list-style-type: none"><li>• PhD supervisors prove a high-level research activity.</li><li>• The research infrastructure is corresponding to the assumed mission and objectives.</li></ul>	<p><b><u>Weaknesses:</u></b></p> <ul style="list-style-type: none"><li>• Lack of clear evidence of the activity of the guidance commissions.</li><li>• Lack of existence and follow-up of an internationalization plan with clear and specific measures.</li></ul>
<p><b><u>Opportunities:</u></b></p> <ul style="list-style-type: none"><li>• The quality of doctoral supervisors allows obtaining a high degree of internationalization.</li><li>• The topicality of the doctoral field allows attracting a significant number of candidates.</li></ul>	<p><b><u>Threats:</u></b></p> <ul style="list-style-type: none"><li>• Lack of internship or stays at other institutions from the PhD students.</li><li>• The necessity to obtain the habilitation from other young researcher in order to ensure the sustainability of the domain.</li></ul>

## V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1		A.1.1.1	The indicator is fulfilled.	Some pages of the site devoted to doctoral studies are found only in Romanian. No English version. Should be translated (for the admission of doctoral students, for the completion of doctoral studies).
2		A.1.1.2	The indicator is fulfilled.	The SD-SFI regulation is in rumanian. English translation is recommended to be made available.
3		A.1.2.1	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
4		A.1.2.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
5		A.1.3.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
6	*	A.1.3.2	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
7	*	A.1.3.3.	The indicator is fulfilled.	Even if this indicator is fulfilled, some additional information regarding how it spreads over the total doctoral students could provide a more global idea.
8	IPC	A.2.1.1.	The indicator is fulfilled.	Annexes provided with the description of material and infrastructure equipment is provide din rumanian. For next occasions, those aspects should be better provided also in English.
9	IPC	A.3.1.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
10	*	A.3.1.2.	The indicator is fulfilled.	Young researchers are encouraged to obtain the habilitation ensuring the domain sustainability.
11		A.3.1.3.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
12	*	A.3.1.4.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
13	IPC	A.3.2.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
14	*	A.3.2.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
15	*	B.1.1.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
16	*	B.1.2.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
17		B.1.2.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
18		B.2.1.1.	The indicator is fulfilled.	Some additional courses with topic related to Systems Engineering would be useful for the PhD Students.
19		B.2.1.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.

20		B.2.1.3.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
21		B.2.1.4.	The indicator is fulfilled.	It is requested that guidance feedback in forms of PhD student report should be provided.
22	IPC	B.2.1.5.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
23	IPC	B.3.1.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
24	*	B.3.1.2.	The indicator is fulfilled.	Should be mandatory for the PhD students to have at least one presentation during the doctoral studies.
25	*	B.3.2.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
26	*	B.3.2.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
27		C.1.1.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
28	*	C.1.1.2.	The indicator is fulfilled.	The action plan resulted from the feedback from doctoral students should be presented to all the students.
29	IPC	C.2.1.1.	The indicator is fulfilled.	Ensure all relevant pages can also be found in english. If they are supposed to also attract students from abroad, potential candidates should find the information in english.
30		C.2.2.1.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
31		C.2.2.2.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
32		C.2.2.3.	The indicator is fulfilled.	Indicator accomplished satisfactorily. No recommendations are issued.
33	*	C.3.1.1.	The indicator is fulfilled.	It is recommended to increase the opportunities for funding training internships abroad. A higher percentage of students (if not all) should at some time, conduct such internship.
34		C.3.1.2.	The indicator is fulfilled.	It is recommended to better promote co-supervised PhDs.
35		C.3.1.3.	The indicator is fulfilled.	SD-SFI should encourage the PhD advisors to include international experts in the guidance and public defending commissions



## **VI. Conclusions and general recommendations**

Doctoral School in Fundamental and Engineering Studies (SD-SFI) is part of IOSUD – “Dunarea de Jos” University of Galați (UDJG). From the analysis of the materials made available at institutional level it can be seen that all the criteria have been met.

I present the general conclusions derived from the analysis within the field of Systems Engineering. The doctoral studies have proven to be of high level according to other International doctoral study programmes. This level of excellence is achieved thanks to the high-level research activity of UDJG academics that, also, act as PhD supervisors. In addition, doctoral students, in turn, do have the appropriated research infrastructure to conduct their research activity.

There is identified great potential for internationalization and networking with other institutions outside Romania, those are emerging from high level supervisors. However, that potential is not developed as it could. This fact could represent a great attraction of international doctoral students and more opportunities for academic relationship with international experts.



## **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.*