

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

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

The Board of Directors of the “Alexandru Ioan Cuza” University of Iași requested the periodic external evaluation of doctoral studies among which is Biology as a single doctoral study field of the Doctoral School of Biology, organised by the Faculty of Biology.

In the scope of external evaluation of the University organising doctoral study programmes, the Doctoral Study Domain of Biology was presented by the Director, Professor Luminița Bejenaru, and evaluated by the domain evaluation panel:

- Professor Marieta Costache, coordinator (University of Bucharest)
- Professor Mladen Krajacic, international expert (University of Zagreb)
- Ms. Alexandra Bîngă, PhD student (University of Bucharest)

The external evaluation process was accomplished in hybrid mode by combining face-to-face site-visit and online sessions in the period of September 09 to 17, 2021.

Biology has a long tradition at the Alexandru Ioan Cuza University of Iași, as the Faculty of Sciences, with the Department of Natural Sciences, was established in 1863. The first professors of biology have been awarded PhDs by eminent European universities. They will hereafter remain as creative force and doctoral supervisors mostly until the World War II. In the following period, the doctoral education at the University has been subject to education reforms and increase in number of doctoral supervisors.

The Doctoral School of Chemistry, Life Sciences and Earth, established in 2012, preceded the recent format of doctoral school. Motivated to enhance organisational effectiveness, the staff of the Faculty of Biology decided to re-establish the Doctoral School of Biology, which was accredited in current form in 2017.

Currently, the Doctoral School of Biology has eleven doctoral supervisors – nine professors, an associate professor, and a first-degree scientific researcher. The management is provided by a Director and a Council, with a term of five years, and the secretarial activities are provided by a Secretary. The

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



organisation and functioning comply with the Regulation brought in by the Doctoral School Council, and approved by the Senate. The Doctoral School of Biology is a constitutive member of the Organising Institution for Doctoral Studies, „Alexandru Ioan Cuza“ University of Iași. Thus, a supervising and an additional regulative support is provided on the University level. In recent years, the total number of PhD students has been fluctuated within the range of 32-37.

## **II. Methods used**

The evaluation process started with analysis of the Report of Internal Evaluation, prepared by the Doctoral School Council, and signed by the Director of the Doctoral Study School (Professor Luminița Bejenaru) and the Interim Director of the Council for Doctoral Studies (Professor Ionel Mangalagiu). The Report of the School under review was accompanied by a number of Annexes, covering all the organising, structural and governing issues. Documents, data and information available on the institutional websites (the University, the Faculty, the Doctoral School) has been analysed.

The face-to-face visit to the Faculty of Biology (classrooms, research centres with constitutive laboratories, library) was organised for, and accomplished by the Romanian panel members (Coordinator, Student-member), whereas the international panel member has only participated in online evaluation performances. The later encompassed a series of sessions in which panel members have met the Doctoral Study Council headed by the Director of the Doctoral School, the Dean of the Faculty, representatives of doctoral students in the doctoral study domain, doctoral supervisors, representatives of graduates and employers of the graduates, Ethics Commission members, directors of research centres and representatives of the Commission for Quality Evaluation and Assurance.

The evaluation process was conducted in line with Guidelines regarding the activities carried out during the on-site visit by the Experts' Panel to evaluate a Doctoral Study Domain (ARACIS), and the List of the domains, criteria, standards, performance indicators, and List of critical performance indicators for the periodical external evaluation of Doctoral Study Domains (ARACIS).

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

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

The Faculty of Biology with the Doctoral School of Biology provides all aspects of institutional capacity for an efficient delivery of of doctoral study programme in the domain of biology.

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

*Standard A.1.1. The functional effectiveness is provided for in general legislation at the university level, as well as specific legislation at the doctoral school and the faculty level.*

##### ***Performance Indicator A.1.1.1.***

The general functioning mechanisms of doctoral studies are regulated at the University level by the document adopted by the Senate. Specific mechanisms applied for the Doctoral Study Domain of Biology are based on the internal regulations of the Doctoral School of Biology. The later were brought at the Faculty of Biology, and approved at the University level by the Council for Doctoral Studies.

Elections for the Doctoral School of Biology Council, as well as the Council of Doctoral Schools at the university level, are conducted regularly according appropriate methodology, and encompasses election of both students' representatives and members elected among teachers/supervisors.

Both the admission of doctoral students, and the completion of doctoral studies is conducted using specified methodology. In the ongoing academic year, the new regulations, approved recently by the Senate, will be followed.

At the university level, specific mechanisms are established to ensure the quality of doctoral supervisors and recognition of the equivalence of the doctorates awarded abroad.

The Council of the Doctoral School, headed by its Director, is assembled regularly to ensure functional management concerning contracts for doctoral studies, proposals of topics, standards for granting PhD title, and all the related issues.

*Recommendations:*

**The indicator is fulfilled.**

#### **Performance Indicator A.1.1.2.**

Mandatory criteria, procedures and standards, established in the scope of the doctoral school regulations, are applied to all the issues regarding doctoral supervisors, the training programme, obligations of doctoral candidates and prevention of fraud, including plagiarism.

*Recommendations:*

**The indicator is fulfilled.**

*Standard A.1.2.* The Faculty of Biology with the Doctoral School of Biology has the logistical resources necessary to carry out the doctoral studies' mission.

#### **Performance Indicator A.1.2.1.**

The IT system eSims is provided and maintained by the adequate university department. At the university level, continuous efforts in improving the tracking of doctoral students and their academic background are supported by adequate projects.

*Recommendations:*

**The indicator is fulfilled.**

#### **Performance Indicator A.1.2.2.**

The software used to verify similarities or plagiarism is available to all the teachers and supervisors, and an evidence of its use is demonstrated in the Internal Evaluation Report. It is an object of permanent concern at the University, and its use is considered an obligation of the doctoral studies according to the regulation documents.

*Recommendations:*

**The indicator is fulfilled.**

*Standard A.1.3.* The Faculty of Biology 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.**

Within the Doctoral School of Biology, 14 research grants have been awarded to the doctoral supervisors and were operating within the past five years, of which the two grants are recently under implementation. The grants address relevant themes for the Study Domain of Biology, and most of them were engaging doctoral students.

*Recommendations:* The doctoral School of Biology is expected to take advantage of every research grant by engaging doctoral students.

**The indicator is fulfilled.**

**Performance Indicator \*A.1.3.2.**

Within the Doctoral School of Biology, there are 11 doctoral students (which makes nearly 30% of active students at the time of evaluation) who were benefited for 12 months receiving additional funding sources from a human resources development grant.

*Recommendations:*

**The indicator is fulfilled.**

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

In the scope of Doctoral School of Biology, doctoral students have been reimbursed for training expenses since 2019. In that year (before coronavirus epidemics) 5.37% of the Doctoral School income was allocated for conference participation and research trainings abroad.

*Recommendations:* The Doctoral School of Biology is expected to invest more in research training, as well as other aspects of professional training of doctoral students.

**The indicator is partially fulfilled.**

**Criterion A.2. Research infrastructure**

*Standard A.2.1.* The Doctoral School of Biology has a modern research infrastructure to support the conduct of specific activities in the scope of doctoral study programme in biology.

**Performance Indicator A.2.1.1.**

The Doctoral School of Biology relies on research infrastructure of 8 different research laboratories (27 laboratory rooms and 9 auxiliary rooms) in the scope of the Faculty of Biology. Each laboratory offers special research capabilities, and altogether there is a superior research environment enabling successful, high-quality research in a range of biological disciplines, including molecular biology and biochemistry, molecular genetics, microbiology, zoology, plant sciences, neurobiology and neuropsychopharmacology, and bioarcheology. The research tools and equipment of any laboratory is available to all the researchers of the Doctoral School, including doctoral students and their supervisors. In this way, an interdisciplinary collaboration is enabled and stimulated.

The most prominent items available at the Faculty of Biology are:

- DNA sequencer and complete line for DNA extraction, amplification and engineering

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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.

- HPLC and FPLC chromatography systems
- confocal microscope, microscope with reflected light, automated stereomicroscope
- transmission electron microscope and scanning electron microscope
- fermenter, climate chamber and plant growth chamber
- equipment for behavioral studies on laboratory animals

It is also worth mentioning the existence of many scientific collections, including plasmid vectors, strains of commercially unavailable microorganisms, osteological, archeozoological, paleoanthropological and invertebrate collections.

Access to international databases, for academic staff and doctoral students, should also be considered significant research infrastructure.

Finally, a library with a biology profile (7 bookshelf-rooms and a reading room with 70 places, total area of 300 m<sup>2</sup>) should be mentioned.

The members of the Doctoral School of Biology and the research groups make continuous efforts to further capitalise on the research infrastructure, which is documented by a list of 26 new research equipment that have been purchased in the last five years.

*Recommendations:*

**The indicator is fulfilled.**

### **Criterion A.3. Quality of Human Resources**

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

#### ***Performance Indicator A.3.1.1.***

At the time of evaluation, there are 11 PhD supervisors, of which 8 (72%) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates.

*Recommendations:*

**The indicator is fulfilled.**

#### ***Performance Indicator \*A.3.1.2.***

More than half (72.7) of all doctoral advisors of the Doctoral School of Biology have a full-time employment contract for an indefinite period with the Faculty of Biology.

*Recommendations:*

**The indicator is fulfilled.**

#### ***Performance Indicator A.3.1.3.***

The study subjects in the doctoral training programme based on advanced university studies are delivered by the teaching staff / researchers who are PhD supervisors within the Doctoral School of Biology. Among them, there are 7 university professors, one associate professor, and one CS I, all with proved expertise in the field of biology.

*Recommendations:*

**The indicator is fulfilled.**

#### ***Performance Indicator \*A.3.1.4.***



Within the Doctoral School of Biology there is no PhD supervisor who concomitantly coordinates more than 8 doctoral students. In the Study Domain of Biology, supervisors with more than three doctoral candidates are exceptions.

*Recommendations:*

**The indicator is fulfilled.**

*Standard A.3.2.* The doctoral advisors within the Study Domain of Biology are carrying out a scientific activity visible at international level.

**Performance Indicator A.3.2.1.**

The majority (90%) of PhD supervisors within the Doctoral School of Biology are internationally recognised scientists in their areas of expertise. They published at least 5 WoS-indexed publications during the last 5 years. A number of those papers is published in highly ranked journals. The international awareness of the aforementioned supervisors is presented by a remarkable number of citations. Furthermore, their scientific achievements are recognised and presented through membership in international professional organisations, and membership on scientific boards of international highly ranked journals in which they have regularly participated as reviewers.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator \*A.3.2.2.**

In the Doctoral Study Domain of Biology, 81% of the PhD supervisors are active in their scientific field acquiring at least 25% of the score requested by the minimal CNATDCU standards.

*Recommendations:*

**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 master's degree graduates from other higher education institutions in the country or abroad (5), who have enrolled for the doctoral study programme in biology within the past five years, and the number of seats financed from the state budget (35) is 0.14.

At the same time, the ratio between the number of candidates (44) and the number of places funded by the state budget (35) is 1.26.

*Recommendations:* Additional efforts would be necessary to attract more candidates who were awarded MS degree from other Romanian institutions. Some analysis of strengths and weaknesses



in comparison to other universities would facilitate that task. By delivering of the study programme in English, it would be possible to enrolle foreign doctoral students.

**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.**

An admission contest is set up to approve academic, research and professional performances of the doctoral candidates. Their previous academic and research performances are assessed through topics and bibliography, and their interest for scientific research is assessed by a research project and an interview, as well as by written test. Success and average grade during bachelor and master level are assessed and are considered separation criteria.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator B.1.2.2.**

The expelling rate of doctoral students does not exceed 30%.

*Recommendations:*

**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 programme of the Doctoral School of Biology, based on advanced academic studies, includes 4 disciplines relevant to the scientific research training of doctoral students. One of them is intended to study in-depth the research methodology, including statistical data processing.

The Advanced University Studies Programme is delivered in the first semester. It is based on a teaching plan and curricula agreed by all the supervisors, and approved by the Council of Doctoral School of Biology and the Council of Doctoral Studies (university level). The Scientific Research Programme occupies the rest of the doctoral programme – total duration of 3 years, with the possibility of extension for one year.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator B.2.1.2.**





One discipline of the doctoral training programme is dedicated to ethics and intellectual property in scientific research.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator B.2.1.3.**

There are mechanisms of internal (at the level of the Faculty of Biology) and external (at the level of University) evaluations that ensure the academic training programme (disciplines and research activities) addresses the learning outcome, including appropriate knowledge, laboratory skills, responsibility and autonomy of doctoral students.

Following completion of the Advanced University Studies Programme, there are four reports aimed to establish the rhythm of the Scientific Research Programme (including acceptance of a thesis, progress, and finalising with an approval of the public defence). All the reports are written, but also presented by the doctoral candidate.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator B.2.1.4.**

Doctoral students enrolled in the Doctoral School of Biology permanently benefit from counselling and guidance by a commission consisting of 3 specialists with the title of doctor, among which a doctoral supervisor has the leading role. Furthermore, the complete steering committee meets four times during the doctoral training period, on the occasion of the four research reports defined in the Regulation on the organisation and functioning of doctoral university studies within the Doctoral School of Biology. The report is accepted in agreement with all the committee members.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator B.2.1.5.**

For the Doctoral Study Domain of Biology, there is an average of three doctoral students per supervisor. Taking into account all the academic staff members who provide guidance, the ratio between teachers/researchers and doctoral candidates is about 1:1.

*Recommendations:*

**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.**





Within the past five years, 22 candidates have completed their doctoral study programme and publicly defended their theses. According to the Doctoral School Regulations, a co-authorship in a publication is the prerequisite to thesis defence, thus each doctoral student has published at least one article. In principle, within the Doctoral Study Domain of Biology, the scientific papers are published in the respected international journals, thus their significant original contributions to the research field are not doubtful.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator \*B.3.1.2.**

Within the last five years, the ratio between the number of doctoral students' presentations and the number of students who have completed their doctoral studies is 2.86.

*Recommendations:*

**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 Doctoral School of Biology does not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.

*Recommendations:*

**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.

*Recommendations:*

**The indicator is 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.**

An institutional framework, as well as an operational procedure regarding evaluation and internal monitoring of the Doctoral School of Biology is established at the University level and the Faculty level. As a result, periodic reports are made to accredit the doctoral school, and the permanent evaluation is performed to ensure proper activity and operational quality. There is a continuous development of the evaluation process. In the scope of the quality assurance, the scientific activities of advisors and doctoral students, as well as the infrastructure, logistics and the training programme are permanently assessed.

*Recommendations:*

**The indicator is fulfilled.**

#### **Performance Indicator \*C.1.1.2.**

At the level of the Doctoral School of Biology, the Questionnaire for assessing the quality of doctoral studies is applied annually. The doctoral students give suggestions for improvement of the academic and administrative activity. The report of the internal evaluation commission contains a series of recommendations that are transposed in the action plan.

*Recommendations:*

**The indicator is 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.**

Information of interest to doctoral students and information of public interest are available on the University website and on the website of the Doctoral School of Biology. This information concerns the doctoral school regulations, admission regulations, doctoral studies contract, the regulations for completing the studies including the procedure for public defense of the thesis, the content of the study programme, and the research topics of potential supervisors. Institutional contact data, list of PhD students in the field with basic information, and information about the standards for elaboration of a doctoral thesis are also available.

*Recommendations:*

**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.**

Several academic databases relevant to the doctoral studies domain are available at the University level or through the Central University Library.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator C.2.2.2.**

An electronic system for verifying the degree of similarity with other scientific works is also available. The access is ensured for both supervisors and doctoral students.

*Recommendations:*

**The indicator is fulfilled.**

**Performance Indicator C.2.2.3.**

All doctoral students have access to scientific research laboratories or other facilities of the Faculty of Biology, but also of the Alexandru Ioan Cuza University. This is ensured by the proper regulations on both the university level and the level of the Doctoral School of Biology.

*Recommendations:*

**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.**

The percentage of doctoral students who have completed at least one single internship abroad or another form of mobility during the last five years is over 50%. It seems however, that the majority of internships are short-term visits arranged through Erasmus+ Programme, or conference attendances.

*Recommendations:* It would be necessary to ensure funds, and introduce policies and measures aiming at increasing the duration of doctoral students' internships in advanced laboratories of the internationally recognised scientific institutions. International collaborations would also help in establishing fruitful environment for long-term internships. The later would additionally contribute to doctoral supervisors' international visibility.

**The indicator is fulfilled.**

**Performance Indicator C.3.1.2.**

Invitations of leading experts to deliver courses for doctoral students are reported in the Internal Evaluation Report of the Doctoral School. However, those examples are rather limited.

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

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

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

*Recommendations:* It would be useful and attractive to intensify participation of leading international experts in the doctoral study programme.

**The indicator is fulfilled.**

**Performance Indicator C.3.1.3.**

A list of doctoral students, who have participated in some international collaboration is presented in the Internal Evaluation Report. However, those examples are rather limited. As a result, a list of international experts who have been included in guidance committees, or thesis defence committees is limited too.

*Recommendations:* It would be necessary to intensify international collaboration in which doctoral students actively participate. At the same time, international experts are expected to participate more in the doctoral study programme, including their participation in guidance committees and thesis defence committees. Additional efforts are recommended to enhance international visibility of the Doctoral School of Biology and to take the opportunity to attract doctoral candidates from neighbouring countries.

**The indicator is partially fulfilled.**

## IV. SWOT Analysis

<p><b><u>Strengths:</u></b></p> <ul style="list-style-type: none"> <li>- the strengths identified over the entire indicators' analysis report will be reproduced. Some other general strengths that can be included in the given indicators' analysis can also be included.</li> </ul> <p><b>Operating procedures and mechanism.</b> The doctoral studies in Biology take place based on clear and transparent regulations, methodologies and procedures. These regulations comply with applicable national laws and legal provisions.</p> <p><b>Logistic resources.</b> The Doctoral School of Biology has the necessary logistical resources for a successful implementation of the study program (an informatic platform for managing the students' academic activity over the entire year - eSIMS, a platform for checking plagiarism – Turnitin)</p> <p><b>Research infrastructure.</b> The research infrastructure available for the Doctoral School of Biology is rather modern and can support the specific activities planned in the doctoral study programme.</p> <p><b>Human resource – qualification and experience.</b> Eight (72%) out of the 11 PhD advisors that are involved in the Doctoral School of Biology have higher performance scores compared to the minimal national standards. These minimal standards are established by CNATDCU and refer to the minimal performance required for the defence of the habilitation thesis and hence, PhD coordination. 90% of the PhD advisors have a good international visibility as reflected by the publications available in <i>ISI Web of Science</i>. 81% of the PhD advisors are active researchers, with over 25% of their performance scores obtained, based on publications from the last 5 years.</p> <p><b>The quality of the selected PhD candidates.</b></p>	<p><b><u>Weaknesses:</u></b></p> <ul style="list-style-type: none"> <li>- the weaknesses identified throughout the report will be resumed as part of the indicators' analysis. Other general weaknesses that do not fall within a particular indicator may be formulated.</li> </ul> <p><b>Financial resources.</b> A relatively low amount of money from the available funding is allocated for the actual professional training of the students (attending conferences, summer schools, research stages, fees for publications, etc)</p> <p><b>Number and diversity of the PhD candidates.</b> The ability to attract candidates from outside the institution (including abroad) or to attract a large number of candidates in general is rather limited.</p> <p><b>The inclusion of international experts as members of the coordination committee or in the final defence of the thesis is rather limited.</b></p>
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Selection of the PhD students relies on the criteria based on academic and research performances. The abandon rate is relatively low.

**The PhD study program** ensure that the students receive the required training and develop the needed skills for performing research in an ethical manner.

**Doctoral study results.** The results of the research activity performed by the PhD are presented at scientific conferences (2.86 conferences/student) and research articles (minimum one per student). A great number of PhD students managed to publish articles in high impact journals (Q1 and Q2 journals).

**The members of the coordination committee** are highly involved in the PhDs activity thorough the whole doctoral stage and during the thesis preparation.

**External scientific references.** A large number of external scientific references are involved in the final defence of the PhD thesis.

**Transparency.** The information required by the PhD students as well as other public information is readily available on the doctoral school website and on the University website.

**Learning and research resources accessibility.** The PhD students can access databases (literature, scientific data such as sequences or omics data) as well as instruments from labs that are part of the Biology department, as well as labs from other departments belonging to the same University.

**Collaboration agreements** with other universities and institutes from Romania and abroad. The Doctoral Scholl of Biology frequently recruits international experts to deliver lectures for the doctoral students.

<p>The graduates (doctors in Biology) have a high level of employability, both in academia, research or private sector. Doctoral school in Biology never had a thesis rejected by CNATDCU for the last 10 years.</p>	
<p><b><u>Opportunities:</u></b></p> <ul style="list-style-type: none"> <li>- possible lines of action for the development of the institution under review shall be identified;</li> <li>- examples of opportunities: a favorable economic environment in the proximity of the assessed institution, the uniqueness of the study programs and their relevance to the local/national market, the overall attractiveness of the study programs etc.</li> </ul> <p>The orientation of the doctoral research towards fields that are a national and international priority such as health, environment, climatic changes, etc).</p> <p>Opportunity to attract candidates from abroad (UE and non-UE), with an estimated large pool of candidates available in the neighbouring countries Ukraine and R. Moldova.</p> <p>Submitting infrastructure and research projects as part of the recent National Plan for Development and Resilience, 2022 – 2026.</p>	<p><b><u>Threats:</u></b></p> <ul style="list-style-type: none"> <li>- the possible causes of the deficient aspects (the causes of the identified weaknesses), which are practically the threats to the proper functioning of the institution, shall be identified;</li> <li>- besides, there may be external threats, such as: the inopportune economic environment in the proximity of the assessed institution, the conduct of low attractiveness study programs for both candidates and the labor market etc.</li> </ul> <p>Low funding of the doctoral studies at the national level.</p> <p>A slow and inefficient administrative staff that could delay and even block the research activities (by for example, delaying the procurement of consumables and reagents)</p> <p>A downcurved quality of the candidates wishing to have a PhD.</p> <p>The efflux of good undergraduate and graduate students towards training programs in EU and USA.</p>



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

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
1.	PI	<b>A.1.1.1.</b> 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 indicator is fulfilled.	
2.	PI	<b>A.1.1.2.</b> The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.	The indicator is fulfilled.	
3.	PI	<b>A.1.2.1.</b> The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.	The indicator is fulfilled.	
4.	PI	<b>A.1.2.2.</b> The existence and use of an appropriate software program and evidence	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		of its use to verify the percentage of similarity in all doctoral theses.		
5.	IP	<b>A.1.3.1.</b> 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.	The indicator is fulfilled.	The doctoral School of Biology is expected to take advantage of every research grant by engaging doctoral students.
6.	PI *	<b>A.1.3.2.</b> The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.	The indicator is fulfilled.	
7.	PI *	<b>A.1.3.3.</b> At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).	The indicator is partially fulfilled.	The Doctoral School of Biology is expected to invest more in research training, as well as other aspects of professional training of doctoral students.
8.	CPI	<b>A.2.1.1.</b> 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	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		described above, which was purchased and developed within the past 5 years will be presented distinctly		
9.	CPI	<b>A.3.1.1.</b> Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.	The indicator is fulfilled.	
10.	PI *	<b>A.3.1.2.</b> At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.	The indicator is fulfilled.	
11.	PI	<b>A.3.1.3.</b> The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.	The indicator is fulfilled.	
12.	PI *	<b>A.3.1.4.</b> The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs does not exceed 20%.	The indicator is fulfilled.	
13.	CPI	<b>A.3.2.1.</b> 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	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		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.		
14.	PI *	<b>A.3.2.2.</b> At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years	The indicator is fulfilled.	
15.	PI *	<b>B.1.1.1.</b> The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.	The indicator is fulfilled.	Additional efforts would be necessary to attract more candidates who were awarded MS degree from other Romanian institutions. Some analysis of strengths and weaknesses in comparison to other universities would facilitate that task. By delivering of the study programme in English, it would be possible to enrol foreign doctoral students.
16.	PI *	<b>B.1.2.1.</b> Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		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.		
17.	PI	<b>B.1.2.2.</b> The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission does not exceed 30%.	The indicator is fulfilled.	
18.	PI	<b>B.2.1.1.</b> The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.	The indicator is fulfilled.	
19.	PI	<b>B.2.1.2.</b> At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.	The indicator is fulfilled.	
20.	PI	<b>B.2.1.3.</b> The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.	The indicator is fulfilled.	
21.	PI	<b>B.2.1.4.</b> All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.	The indicator is fulfilled.	
22.	CPI	<b>B.2.1.5.</b> For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
23.	CPI	<b>B.3.1.1.</b> For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain	The indicator is fulfilled.	
24.	PI *	<b>B.3.1.2.</b> The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.	The indicator is fulfilled.	
25.	PI *	<b>B.3.2.1.</b> The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.	The indicator is fulfilled.	
26.	PI *	<b>B.3.2.2.</b> 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.	The indicator is fulfilled.	
27.	PI	<b>C.1.1.1.</b> 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	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		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.		
28.	PI *	<b>C.1.1.2.</b> 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.	<b>The indicator is fulfilled.</b>	
29.	CPI	<b>C.2.1.1.</b> 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	<b>The indicator is fulfilled.</b>	



No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		where they will be presented; this information will be communicated at least twenty days before the presentation.		
30.	PI	<b>C.2.2.1.</b> All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.	The indicator is fulfilled.	
31.	PI	<b>C.2.2.2.</b> Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.	The indicator is fulfilled.	
32.	PI	<b>C.2.2.3.</b> All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.	The indicator is fulfilled.	
33.	PI *	<b>C.3.1.1.</b> 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.	The indicator is fulfilled.	It would be necessary to ensure funds, and introduce policies and measures aiming at increasing the duration of doctoral students' internships in advanced laboratories of the internationally recognised scientific institutions. International collaborations would also help in establishing fruitful environment for long-term internships. The later would additionally contribute to doctoral supervisors' international visibility.
34.	PI	<b>C.3.1.2.</b> In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.	The indicator is fulfilled.	

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
35.	PI	<b>C.3.1.3.</b> 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.).	<b>The indicator is partially fulfilled.</b>	It would be necessary to intensify international collaboration in which doctoral students actively participate. At the same time, international experts are expected to participate more in the doctoral study programme, including their participation in guidance committees and thesis defence committees. Additional efforts are recommended to enhance international visibility of the Doctoral School of Biology and to take the opportunity to attract doctoral candidates from neighbouring countries.

## VI. Conclusions and general recommendations

The Doctoral School of Biology is based on regulations that comply with the national laws and legal provisions. It has all the necessary logistical resources and research infrastructure. The high-performance human resources go far beyond the minimal national standards. Selection of the PhD students relies on the criteria based on academic and research performances. The research activities of the doctoral school provide significant scientific outcome with students' co-authorship in a number of papers, of which many have been published in high-impacted journals. Doctoral students are properly supported by their supervisors and other members of guidance committees. In general, the quality assurance issues are properly managed. The graduates have good employability, in both academia and research institutes, or private sector.

Additional efforts are expected towards improvement of all the aspects of internationalisation, including students' long-term research trainings abroad, and recruitment of both foreign students and teachers, or guidance-committees members.

## 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.*

Zagreb, October 06, 2021.