

# The External Evaluation Report of Babes-Bolyai University of Cluj-Napoca Doctoral Study Programme in Chemical Engineering

## I. Introduction

This report summarizes the results of periodic external evaluation of the Doctoral Study Programme in Babes-Bolyai University of Cluj-Napoca (UBB) during the 02-05 November 2021. The evaluation was conducted by the expert committee:

- Coordinator prof. univ. dr. SECUIANU Catinca, Universitatea "Politehnica" București,
- International expert prof. DSc AARNA Olav, Estonian Business School,
- PhD student ASOLTANEI Adriana-Mariana, "Gheorghe Asachi" Technical University of Iași.

According to the Charter, UBB is a "comprehensive university of advanced research and education that undertakes to train young people for the contemporary society and the future." UBB currently has over 53,000 students (33,664 undergraduate students, 9,837 master's students, 2,260 doctoral students) and 1,509 teachers, making it one of the largest in Romania and in this region of Europe. In the 2020/21 academic year, the number of foreign students enrolled at UBB was 1,232 at undergraduate and master's level and 113 at doctoral level.

Doctoral degree studies are carried out at UBB in accordance with the National Education Law no. 1/2011, Law 49/2013, the Code of Doctoral Studies approved by GD 681/2011, the UBB Charter, the UBB Regulation for organising and conducting doctoral studies approved by Senate Decision no. 483/2020, and the regulations of the UBB doctoral schools, as further amended and supplemented. Doctoral studies are currently conducted in 31 doctoral schools spanning 32 doctoral areas, incl. Chemical engineering. Each doctoral school is subordinated to one of the 20 faculties and has the rank of department, as well as a list of positions and its own curriculum. The subjects taught in doctoral schools are developed in accordance with the curriculum.

The Institute for Doctoral Studies is a structure established on 1 May 2006, with the mission to manage the doctoral schools of UBB, based on the activity of specialised faculties and departments, through adequate regulations and measures. Activities of the Institute are governed by the Statute and the organisational structure endorsed by the UBB Senate. Under the direction of the Council for Doctoral Studies and in collaboration with the councils of doctoral schools, the Institute coordinates all administrative activities related to the doctoral studies at UBB.

The Doctoral Study Programme in Chemical Engineering belongs to the fundamental domain of engineering. The Programme is run by the Doctoral School in Chemical Engineering (DSCE) accredited by Order of the Minister of Education and Research No. 667 on 28 March 2007. The DSCE is a structural unit of the Faculty of Chemistry and Chemical Engineering (FCCE). The number of doctoral students enrolled in academic year 2020/21 was 13, incl 8 in extension, whereas 2 of them defended their theses in spring 2021. The number of supervisors affiliated – 5. During the evaluation period 8 doctoral students have graduated the Programme.

## II. Methods used

The external evaluation process followed the methodology presented in the Guide on conducting the process of Periodic External Evaluation of institution organising doctoral study programs (IOSUD). The conclusions drawn are based on:



- The analysis of the internal evaluation report of the Doctoral Domain Chemical Engineering (DSCE) and its Annexes;
- The analysis of documents, data and information available on the IOSUD/Doctoral School website, in electronic format.
- Meeting/discussions with doctoral students in the DSCE;
- Meeting/Discussions with the graduates of the DSCE;
- Meeting/Discussions with employers of the graduates of the DSCE;
- Meeting/Discussions with the officials of the DSCE;
- Meeting/Discussions with the doctoral advisors affiliated to the DSCE.

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

The analysis follows the structure of the List of the domains, criteria, standards, performance indicators and the List of critical performance indicators for the periodical external evaluation of IOSUD approved by the Order 3651 of 12.04.2021 of the Minister of Education.

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

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

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

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**Performance Indicator A.1.1.1.** *The existence of specific regulations and their application at the level of the DSCE:*

The internal regulations for organising the doctoral studies are included in the UBB Regulation for organising and conducting doctoral studies, which was updated in early 2020 (Annex 1.3.29). A procedure for assessing doctoral schools and fields was developed and adopted in 2019 (Annex 1.3.31). Specific regulations within IOSUD and the DSCE are published on the website of UBB (<https://doctorat.ubbcluj.ro/eng/>).

Meetings with the DSCE Council, academic staff and doctoral students confirmed that the aforementioned regulations are operational.

**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.*

The BABES-BOLYAI UNIVERSITY REGULATIONS FOR THE ORGANIZATION AND UNFOLDING OF DOCTORAL STUDIES ([https://doctorat.ubbcluj.ro/wp-content/uploads/2021/10/REGULAMENTUL-UNIVERSITATII-BABES\\_EN.pdf](https://doctorat.ubbcluj.ro/wp-content/uploads/2021/10/REGULAMENTUL-UNIVERSITATII-BABES_EN.pdf), approved by Senate's Decision no. 483/01.13.2020 and amended by the Senate's Decision no. 46/04.19.2021) includes: specific references to the way new members who are doctoral advisors are accepted; references to the mechanisms by means of which the decisions regarding the content of the training programme are made; the regulation of Doctoral School Council



(DSC) with references to the procedures for the doctoral advisor's replacement; the regulation of DSC with references to the conditions under which the doctoral programme can be interrupted; the regulation of DSC with references to the modalities to prevent fraud; the regulation of DSC with references to the way access to research resources is ensured.

During the meetings the doctoral students, the members of DSC and the supervisors questioned confirmed the application of these regulations.

***The indicator is fulfilled.***

***Performance Indicator\*A.1.1.3. Doctoral schools included in IOSUD are organized as disciplinary or interdisciplinary disciplines/thematic, according to Article 158, paragraph (7) of the Law of National Education No. 1/2011 with subsequent amendments and additions.***

UBB has 31 doctoral schools, including the DSCE (Annex 1.1.18), administered by the Institute of Doctoral Studies (Annex 1.1.19) and governed by the Council for Doctoral Studies (Annex 1.1.22). Evidence provided in the internal evaluation report and during the meetings/discussions demonstrates that the DSCE is organised following the Article 158, paragraph (7) of the Law of National Education No. 1/2011 with subsequent amendments and additions, is operational and capable of fulfilling its mission.

***The indicator is fulfilled.***

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

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section.

***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.***

Doctoral students' records and their entire activity within the doctoral programme are preserved in personal files both on paper and in electronic format. The staff of the Institute for Doctoral Studies is in charge of storing data pertaining to doctoral students' doctoral programmes, using the following resources:

- AcademicInfo is an UBB internal platform that has been in place since 2007 (Annex 1.3.47). The platform contains the records of doctoral students who are currently enrolled in the doctoral programmes: personal information, registration number, and information concerning their doctoral programme (the study contract and its annexes (individual study plan and addendum for the extension or interruption of studies));
- The national Single Matriculation Register (rei.gov.ro) contains the details of doctoral students' personal information, their doctoral status data, interruptions, extensions, grace periods, etc. (Annex 1.3.48).

Access to information relevant to doctoral applicants and doctoral students, through the Institute for Doctoral Studies, has implemented a computer system in the form of a database for the management of doctoral students and their academic results. The database also provides various standardised documents designed to help doctoral supervisors and doctoral students in the elaboration of specific documents. The FCCE ensures the transparency of public interest information by providing current and accurate qualitative and quantitative data on study programmes, degrees,



teaching and research staff, etc. on its website: ([www.chem.ubbcluj.ro](http://www.chem.ubbcluj.ro)), in Romanian, Hungarian, and English, and for the DSCE (regulations, contracts, study programmes, thesis procedure, habilitation) on its website: (<http://www.chem.ubbcluj.ro/~sdic/>).

**The indicator is fulfilled.**

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

In 2016 UBB purchased and annually renewed a software license to check the percentage of similarity in all doctoral theses provided by Turnitin (Annex 1.2.16.1 and Annex 1.2.16.2). The analysis for checking the similarities is carried out by the Institute for Doctoral Studies personnel in accordance with the Revised procedure for the generation and review of the Similarity Report, which was published on 8 March 2017, supplementing the CSUD Decision no. 12327/19.06.2016.

Doctoral students met confirmed the possibility to use the aforementioned software with the permission of the supervisor.

**The indicator is fulfilled.**

## **Criterion A.2. Research infrastructure**

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

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**Performance Indicator A.2.1.1.** *The IOSUD/the doctoral school(s) present proof of possessing or having rented adequate spaces for research activity specific to doctoral studies (laboratories, experimental fields, research stations etc.).*

Doctoral studies at DSCE are based on three research centres:

- The Research Centre for Computer Aided Chemical Engineering;
- The Physical-Chemical Analysis Centre;
- The Centre for Research in Electrochemistry and Unconventional Materials.

All three Centres are accredited by UBB as Research Centres of Excellence in the UBB internal evaluations of 2010 and 2016. Doctoral students of DSCE can use the equipment of 8 research laboratories (Annex A2.1.3).

The International Expert participated only in online mode. There was no possibility to evaluate the situation on the spot.

**The indicator is filled.**

**Performance Indicator A.2.1.2.** *The IOSUD/doctoral school(s) has/have collaboration agreements with higher education institutions, research institutes, research networks for joint partnerships and have access for using various research infrastructures; the offer for research services is presented publicly using a dedicated platform.*



The DSCE has ERASMUS+ agreements with 12 higher education institutions. The information about the possibilities offered is accessible publicly through UBB web site [https://cci.ubbcluj.ro/international\\_news/international\\_opportunities.php](https://cci.ubbcluj.ro/international_news/international_opportunities.php).

Recommendation:

Take more efficient advantage of existing cooperation agreements to initiate or become partners of joint or double doctoral programmes.

***The indicator is fulfilled.***

***Performance Indicator A.2.1.3.*** *The IOSUD/doctoral school(s) proves that it is/are concerned with permanent renewal of the research infrastructure to provide doctoral students access to up-dated research resources, by applying to various funding competitions and using own university resources for acquiring new research infrastructure.*

Participation in national research projects, industrial research projects and using the funds of EU funded national projects has allowed to modernise the DSCE research infrastructure.

***The indicator is fulfilled.***

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

Standard A.3.1. At the level of each Doctoral School there are sufficient qualified staff to ensure a quality educational process.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

***Performance Indicator \*A.3.1.1.*** *The share of Doctoral advisors coordinating simultaneously more than 8 doctoral students but not more than 12 during their doctoral studies<sup>1</sup> does not exceed 20%.*

Within the DSCE there are 5 doctoral advisors, incl. 2 professors emeritus. The process of changing generations is underway. Two candidates for the positions of doctoral advisors are in the process of habilitation. Currently the number of doctoral students is 11, incl. 6 in extension. None of the advisors has more than 8 doctoral students.

***The indicator is fulfilled.***

***Performance Indicator A.3.1.2.*** *At least 50% of all teaching/research staff involved in teaching/research activities related to training programs for advanced university studies or in individual research/art creation programs have a full-time employment contract for an indefinite period with the IOSUD.*

---

<sup>1</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.



The total number teaching staff involved at DSCE 14 (Annex 3.1.7). All of them have full-time employment contracts with UBB.

***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. Candidates admitted to doctoral studies demonstrate academic, research and professional performance and are diversified as social representation and by gender.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

***Performance Indicator \*B.1.1.1.*** Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.

Admission to doctoral studies within the DSCE is based on the Regulation of UBB for the organization and development of doctoral studies (Annex B.1.1.1) and the Methodology for admission to doctoral studies at UBB (Annex B.1.1.2) with the additions to the Organization and conduct of admission sessions at UBB, given the suspension of face-to-face teaching activities (Annex B.1.1.3). The interview with candidates is a compulsory part of the admission procedure, together with the written examination.

The ratio between the number of candidates for admission to doctoral studies and the number of places funded from the state budget is presented in (Annex B.1.1.12), and has an average value over the last five years of 0.85.

***The indicator is fulfilled.***

***Performance Indicator B.1.1.2.*** The IOSUD/doctoral school(s) have a policy for stimulating enrollment of doctoral students coming from disadvantaged social environments, by allocating reserved positions in the admission procedure and/or granting special scholarships, as well as organising support programs to prevent drop-outs.

UBB is committed to ensuring that people from disadvantaged socio-economic backgrounds are able to apply for and complete doctoral studies. Since 2018, special places have been allocated at UBB for Roma candidates seeking admission to doctoral studies, with 14 Roma doctoral students currently enrolled. This is not applicable to the DSCE.

UBB has adopted the Strategy for Reducing the Risk of Student Dropout at Babeş-Bolyai University (Annex 1.3.14). The drop-out rate of doctoral students three years after their enrolment at DSCE is 16% over the last five years in average (Annex B.1.1.13).

#### Recommendation:

The DSCE should undertake more systematic analysis of the reasons for drop-out to design adequate measures to decrease the drop-out rate, and even more importantly to increase the graduation rate.





**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.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**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.*

All the courses in the DSCE Curriculum with the subject descriptions, presented in (Annex B.2.1.1-1, (Annex B.2.1.1-2), (Annex B.2.1.1-3), (Annex B.2.1.1-4), (Annex B.2.1.1-5), take place in the first semester of the first year of doctoral studies (in the academic year 2021/22 the courses take place in spring semester) in order to ensure, right from the beginning of the training, a high level of knowledge of the doctoral students, but also their accommodation with the research equipment they will use during the doctoral training. The courses offered include Advanced Chemical Engineering, Advanced Process Control, and Research Methods in Electrochemical Engineering. For each discipline included in the DSCE Curriculum there are 3 physical hours per week and 20 credits.

**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 in Methodology of Research Project Development in Chemical Engineering includes a module (2 hours C + 12 hours S) dedicated to Academic Ethics and Integrity.

The issues of Intellectual Property in R&D are not presented in any subject course.

**The indicator is partially 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>2</sup>.*

The Doctoral Programme in Chemical Engineering provides training in professional skills and in transversal skills necessary for carrying out research in Chemical Engineering. The curricula are developed for each academic year.

UBB has adopted a template for course syllabys (Annex 1.3.28), which requires defining the intended learning outcomes for each subject course offered and the rubric for assessing. The course syllabi at

---

<sup>2</sup> Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology regarding inscription and registration of higher education qualifications in the the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.



DSCE follow this template (Annex B.2.1.1-1, Annex B.2.1.1-2, Annex B.2.1.1-3, Annex B.2.1.1-4, Annex B.2.1.1-5).

***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.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

***Performance Indicator B.3.1.1.*** *For the doctoral school there are in place mechanisms for valorification of the results of doctoral studies in accordance with the specificity of the particular domain (i.e. technological transfer, products, patents in the case of exact sciences; products and services for social sciences and humanities; festivals, contests, recitals, sports competitions; cultural-arts orders in the vocational domain; presentations at national and international conferences, publication of research results in national and international publications, engaging doctoral students in writing research-development projects etc.)*

The valorisation of the research carried out by the doctoral students of DSCE is conducted primarily through publications in peer-reviewed journals published by UBB. The journal *Studia Chemia* has been indexed in ISI Web of Science with an impact factor FI of 0.244 in 2016 and of 0.494 in 2020.

During the past five years 7 doctoral students graduated from the doctoral programme in Chemical Engineering. There is at least one relevant contribution per area of study and for each of the doctoral students who defended their thesis in 2016 –2020 (Annex A.3.2.5).

The International Expert randomly extracted publications from Annex A.3.2.5 and can assure their relevance and high quality.

***The indicator is fulfilled.***

### **Criterion B.4. Quality of doctoral theses**

Standard B.4.1. Doctoral theses fulfil high quality standards.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

***Performance Indicator B.4.1.1.*** *At the level of IOSUD, the percentage of theses non-validated, at the level of General Council of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNADTCU), without the right of further amendments and re-organizing the process of public defending, is not exceeding 5% in the last 5 years.*

All theses defended in the last 5 years at the DSCE were validated at the level of General Council of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNADTCU).

***The indicator is fulfilled.***





## **Domain C. QUALITY MANAGEMENT**

The domain of quality management has been analysed in the context of the DSCE using resources described in section II.

### **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.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**Performance Indicator C.1.1.1.** *The IOSUD 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 doctoral school(s), 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 academic and social services (including participation to various events, publication of papers etc.) and counselling made available to doctoral students.*

The doctoral studies follow the UBB Regulation for Organising and Conducting Doctoral Studies, which was updated in early 2020 (Annex 1.3.29). The Procedure for Assessing Doctoral Schools and Fields of Study was developed in 2019 and covers all the aspects listed in the Performance Indicator C.1.1.1 (Annex 1.3.31). The FCCE and the DSCE follow the procedures stipulated in the regulations.

At the FCCE, a Quality Assessment and Assurance Committee (Annex C.1.1.1) has been formed, composed of the chairperson, teaching staff members and a student representative. Decisions on the quality assurance are taken in the Faculty Council (Annex C.1.1.2).

At the FCCE level, a quality assurance plan is drawn up annually. The actions envisaged to achieve the objectives in the main areas of university activity have specific deadlines and nominated persons responsible. The quality plan can be accessed on the faculty website and is presented in (Annex C.1.1.3) for the academic year 2020/21.

***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.*

The students' satisfaction with the studies, the physical assets, and the services and facilities provided by UBB is evaluated every two years since academic year 2014/15, and conducted in accordance with a specific procedure established in 2014 and revised in 2019 (Annex 1.3.25). The survey is based on questionnaires that are available in Romanian, Hungarian, German, and English and are distributed to all students, including doctoral students. The survey findings are outlined in a report by the Qualitas Centre (Annex 1.3.26) and are used in the implementation of



strategic and operational objectives, as well as in the quality assurance programmes. The Centre for University Development and Quality Management (<http://cdu.centre.ubbcluj.ro/>) and the Qualitas Centre (<http://qa.ubbcluj.ro/>) coordinate the faculty's quality programmes and their self-assessment, the development of quality management documentation, the coordination of student evaluation of courses, peer evaluation of educational activities, as well as the necessary steps for internal auditing at faculty level.

Feedback from the graduates of doctoral studies is collected by a questionnaire (Annex B.2.1.2). This allows to learn about their level of satisfaction regarding the programme, the learning facilities offered by the DSCE and the university respectively.

Recommendation:

The students need to be informed about the actions taken or planned concerning their recommendations.

**The indicator is fulfilled.**

**Performance Indicator C.1.1.3.** *Students' associations and, according to the case, representatives of students organise elections in the community of doctoral students at the level of each doctoral school, for positions in the councils of doctoral schools, by universal vote, direct and secret, all doctoral students having the right of electing or being elected.*

The regulation on elections for positions in the DSCE stipulates universal, direct and secret vote for all doctoral students. Meeting with doctoral students confirmed that this principle is observed.

**The indicator is fulfilled.**

**Performance Indicator \*C.1.1.4.** *Following the internal evaluation, IOSUD and the doctoral schools draft strategies and policies aiming to eliminate the identified deficiencies and to stimulate scientific and academic performance of IOSUD.*

The UBB Strategic Plan 2020-2024 ([https://www.ubbcluj.ro/en/despre/prezentare/files/Strategic\\_Plan\\_UBB\\_2020-2024.pdf](https://www.ubbcluj.ro/en/despre/prezentare/files/Strategic_Plan_UBB_2020-2024.pdf)) sets the following strategic lines of action for doctoral studies:

- The Institute for Doctoral Studies will be encouraged to organise in a way that will streamline its activity (administratively and financially - including procedures for using doctoral grants) and establish a strategic growth also by connecting UBB doctoral programmes to scientific master's degrees, respectively, postdoctoral programmes;
- Doctoral schools and postdoctoral programmes will be structured and will operate in line with international benchmarks and guidelines, while acknowledging the particularities of the national/regional domains as well as the excellent academic tradition of UBB;
- Besides the joint doctorate, the European doctorate, first introduced in the country at UBB, is strongly endorsed in doctoral schools. UBB will continue to take action at government level to promote the organisation, in compliance with the highest EU requirements, of joint doctorates in a dual diploma programme.
- Educational processes will be focused on mentored learning, experience and exploration, tested and produced creatively in scientific laboratories and/or artistic production spaces. The doctoral student shall have unrestricted access to the allocation from the budget, in consultation with their supervisor, through a procedural process set up by the UBB Institute for Doctoral Studies. Additional funding from public and/or private grants can also be engaged by doctoral supervisors and UBB.



- In addition to the European and Joint Doctoral Programme, a key objective is to increase the participation of foreign collaborations, including throughout studies, but also to recruit a body of external specialists for dissertation examination committees and for conferences coordinated by or facilitated through IOSUD.

All the objectives listed refer to important deficiencies in doctoral studies, particularly in the Chemical Engineering domain.

The Strategy does not contain any measurable performance indicators to evaluate the progress concerning these objectives. Annual action plans (Operating plans) contain quantitative performance indicators, but such plans are available only until 2017.

The DSCE is involved in the continuous development of internal mechanisms to implement quality in teaching and research. At the FCCE a Strategic Plan 2020-24 (Annex C.1.1.4) has been developed and is an integral part of the UBB strategic plan and annual operational plans (Annex C.1.1.7).

Recommendation:

Complement the Strategic Plans 2020-2024 with measurable performance indicators and annual action plans.

**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.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**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 IOSUD/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 the training study 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) information on the opportunities for doctoral students aiming to attend conferences, to publish articles, awarding scholarships etc.*
- (j) links to the doctoral theses's summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.*

All regulations and procedures related to doctoral studies at UBB, particularly the DSCE are published on the university web site <https://doctorat.ubbcluj.ro/eng/>.

**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.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

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

All doctoral students have access to international databases relevant to their area of study on any computer registered in the UBB network through the ANELIS (National Electronic Access to the Scientific Literature for Supporting the Research and Education System in Romania). The databases provide access to: Web of Science, SCOPUS, Science Direct, IEEE, Springer etc. Unfortunately the Internal Evaluation Report does not provide any documentary evidence of this, although the doctoral students confirmed this possibility.

**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.*

UBB has the license for the software by Turnitin (Annex 1.2.16.1 and Annex 1.2.16.2). Doctoral students met confirmed the possibility to use the aforementioned software with the permission of the supervisor.

**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.*

Doctoral students have access to research laboratories with the endorsement of the laboratory head instructor, also mentioned by FCCE regulations (Annex C.1.1.2).

**The indicator is fulfilled.**

### **Criterion C.3. Internationalization**

Standard C.3.1. IOSUD/Doctoral school has a strategy in place and it is applied to enhance the internationalization of doctoral studies.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**Performance Indicator \*C.3.1.1.** *IOSUD, for every doctoral school, 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 UBB Strategic Plan 2020-2024 defines as one of the objectives: Development of international collaborations and partnerships In addition to the European and Joint Doctoral Programme, a key objective is to increase the participation of foreign collaborations, including throughout studies, but also to recruit a body of external specialists for dissertation examination committees and for conferences coordinated by or facilitated through IOSUD ([https://www.ubbcluj.ro/en/despre/prezentare/files/Strategic\\_Plan\\_UBB\\_2020-2024.pdf](https://www.ubbcluj.ro/en/despre/prezentare/files/Strategic_Plan_UBB_2020-2024.pdf)).

The DSCE has 12 ERASMUS+ mobility agreements with foreign universities. The Internal Evaluation Report declares the mobility rate: 53.84%. However, it is unclear how this indicator has been calculated.

Recommendation:

Complement the Strategic Plans 2020-2024 with measurable performance indicators related to internationalisation and annual action plans including the annual target values of these indicators.

***The indicator is fulfilled.***

***Performance Indicator C.3.1.2.*** *IOSUD supports, including providing 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 Internal Evaluation Report declares, that doctoral schools at UBB are taking steps to improve the internationalisation of doctoral studies:

- Encouraging as many foreign applicants as possible to participate in doctoral admission (scholarship holders of the Romanian State, on tuition-paying places -in lei, or in foreign currency). Following the last five admission sessions, an average of 30 foreign applicants were accepted and enrolled in the doctoral programme;
- International co-supervision agreements. In September 2020, there were 25 international co-supervision agreements in place with prestigious universities from seven different countries (Belgium, France, Germany, Italy, the Netherlands, Portugal, Hungary);
- Implementation of the European Doctorate (Annex 1.3.51);
- Co-opting international doctoral supervisors (including UBB teachers who obtained the certification in other countries);
- In recent years, courses in international languages have been introduced at the doctoral level;
- Writing doctoral dissertations in international languages (Annex 1.3.52);
- Inviting foreign experts to participate in the activities of the STAR-UBB research centres (see Annex 1.3.53) or to serve on review committees for the public defence of doctoral dissertations;
- Participation of the Institute for Doctoral Studies employees in activities to promote the doctoral programmes offered by UBB, within the ERASMUS+ mobilities: International Staff Exchange week, Ljubljana, Slovenia 2017 and 1st International Staff Week 4-8th June 2018, Cardinal Stefan Wyszyński University in Warsaw, Poland. Leaflets and brochures with information about doctoral programmes were distributed at educational fairs (Annex 1.3.58.1, Annex 1.3.58.2, Annex1.3.58.3 and Annex1.3.58.4).

Concerning these aspects of internationalisation at DSCE, 20 invited experts have delivered lectures for doctoral students at FCCE. No evidence of international co-supervision addressing the doctoral students of DSCE has been provided. However, international co-supervision is not comparable with randomly invited guest lecturers.

Recommendation:



Using the opportunities of international co-supervision should be an important element of the Internationalisation Strategy for the forthcoming years, incl. relevant financial resources.

**The indicator is fulfilled.**

**Performance Indicator \*C.3.1.3.** *At least 10% of the doctoral theses of every doctoral school of the IOSUD are drafted and/or submitted in an international foreign language or are organised in international co-tutelage.*

During the evaluation period 8 doctoral dissertations have been defended at the DSCE, while 50% of them are in English (Annex 1.3.52).

**The indicator is fulfilled.**

**Performance Indicator C.3.1.4.** *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<sup>3</sup> etc.).*

The Internal Evaluation Report indicates under this Performance Indicator: Invited experts lectures for doctoral students, and participation of some DSCE members as external evaluators (opponents) of doctoral theses in a couple of universities abroad. However, these activities can not be considered as directed towards the fulfillment of Performance Indicator C.3.1.4. No members from abroad have been invited to public defence committees during the evaluation period (Annex C1.1.6)

Recommendation:

Open Doctoral Programme in Chemical Engineering offered in English<sup>4</sup>.

**The indicator is not fulfilled.**

#### **Criterion C.4. System for assurance of ethical and academic integrity**

Standard C.4.1. IOSUD/Doctoral school has a functional and efficient system in place for prevention and assuring ethical and academic integrity norms.

Fulfillment of the standard has been analysed in the context of the DSCE using resources described in section II.

**Performance Indicator C.4.1.1.** *IOSUD, applies the current provisions regulating ethics, deontology/academic integrity, respectively to academic freedom and has developed:*

- *policies based on prevention regarding possible violations of the Code of ethics and academic integrity, demonstrated by public postionings, studies, analyses or measures taken;*
- *practices and mechanisms for preventing fraud, from an institutional perspective as well as from the perspective of the doctoral students;*

---

<sup>3</sup> Doctoral studies are completed by presenting the doctoral thesis in public session in front of a committee whose members hear and judge the final public presentation of the thesis

<sup>4</sup> UBB has Bachelors' and Masters' programmes offered in English. Surprisingly there are no doctoral programmes offered in English yet.





- *practices for preventing possible fraud in academic activity, research or any other activity, including active measures for preventing and avoiding plagiarism of any kind, as well as promoting ethical and integrity/deontology principles or observing intellectual property norms, authors' rights and other related rights, among all members of the academic community;*
- *administrative instruments which allow applying effective and eliminatory sanctions;*
- *mechanisms and measures to assure equal opportunities and protection against intolerance and discrimination of any kind;*

*IOSUD monitors and permanently evaluates these practices and can prove they are applied to all activities and engagement of students in all these processes, and the results of the monitoring is made public yearly or whenever it becomes necessary.*

UBB Code of ethics and professional conduct adopted by Senate Decision No. 24.051/10.12.2019 (Annex 1.1.4) is based on the principles of academic freedom, competence and professionalism, integrity, intellectual honesty, collegiality, loyalty, justice and fairness, non-discrimination and equal opportunities, responsibility. The responsibility for adhering to the Code of Ethics regulations falls on each member of the academic community and the DSCE has mechanisms and procedures in place to ensure and monitor their compliance. The UBB Ethics Committee is supervising the application of the provisions of this Code.

The schedule of virtual meetings did not allow meeting the members of the aforementioned Committee.

***The indicator can not be evaluated.***

***Performance Indicator C.4.1.2.*** *All intimations regarding suspicion of plagiarism related to doctoral theses have been analysed and resolved by the IOSUD within the time interval legally established for expressing in writing its position regarding the intimation received.*

All PhD theses are checked using the plagiarism detection software and the similarity rate established. This check is accomplished on the faculty and university level. Identified similarities are analysed for plagiarism first and foremost by the supervisors.

***The indicator is fulfilled.***

***Performance Indicator C.4.1.3.*** *Annual Reports of the Ethics commission of the IOSUD contain information on the stage of solving each case of intimation or own-initiative intimation regarding violation of norms or ethical aspects relevant for university doctoral studies. description of the facts, the findings from the assessed institution's documents and the evaluation visit itself.*

The Ethics Committee at UBB has not received any applications concerning doctoral studies at DSCE during the periode 2016-2020.

***The indicator is fulfilled.***

***Performance Indicator C.4.1.4.*** *The measures taken by IOSUD after the final decision of CNADTCU to withdraw the title of "doctor" following accusations of plagiarism have addressed all the aspects mentioned in CNADTCU's decision and in the current legislation.*

No such cases occurred during the periode 2016-2020 concerning the DSCE.

***The indicator is fulfilled.***



**Performance Indicator C.4.1.5.** *The measures aiming to prevent academic fraud in the doctoral studies, taken by IOSUD, could be:*

- a) *Suspension of the right to advise newly enrolled doctoral students, for a period of 3 years, in the case of doctoral advisors having coordinated a doctoral thesis with a definitive decision of withdrawal of the “doctor” title for plagiarism;*
- b) *Exclusion from the IOSUD of the doctoral advisor having coordinated at least two doctoral theses with definitive decisions of withdrawal of the “doctor” title for plagiarism;*
- c) *Suspension of the right to organize the admission process of new doctoral students in the Doctoral studies domain, for a period of 2 years, if in the respective domain a doctoral thesis has been finalized and defended with a definitive decision of withdrawal of the “doctor” title for plagiarism.*

The respective regulations are presented on the web site <https://doctorat.ubbcluj.ro/eng/>.

**The indicator is fulfilled.**

**Performance Indicator \*C.4.1.6.** *The scientific reviewers members in the commissions for public defense of two or more doctoral theses with definitive decisions of withdrawal of the “doctor” title for plagiarism, have not been nominated in other commissions for public defence of doctoral theses for a period of at least 3 years.*

No such cases occurred during the periode 2016-2020 concerning the DSCE.

**The indicator is fulfilled.**

**Performance Indicator C.4.1.7.** *IOSUD has a database open to the public containing all the doctoral theses defended in the institution beginning at least in 2016 in a format including: the domain, author, doctoral advisor, title of the thesis and the thesis in electronic format (if there is an agreement of the author).*

Doctoral theses defended at UBB between 2016 and today are available in the the national public database <https://rei.gov.ro/teze-doctorat>.

The search engine of this database doesn't allow to find just all theses of TUIASI or another university. The same is searching by the name of a doctoral student or the title of his/her thesis. The search engine is expecting the whole description of the dissertation (author, title of the thesis, institution).

Recommendation:

The Ministry of Education is invited to modernise the search engine of the national database of doctoral dissertation to allow searching dissertations by university, by author or title.

**The indicator is fulfilled.**

#### IV. SWOT Analysis<sup>5</sup>

<u>Strengths:</u>	<u>Weaknesses:</u>
<ul style="list-style-type: none"> <li>• Qualified supervisors with the next generation stepping in;</li> <li>• Well developed research infrastructure;</li> </ul>	<ul style="list-style-type: none"> <li>• Low efficiency of doctoral studies (drop-out, graduation rate) – unfortunately the graduation rate is not among performance</li> </ul>

<sup>5</sup> The proposed template of SWOT Analysis does not correspond to the internationally accepted understanding of this method, where Strengths and Weaknesses correspond to the organisation under review, Opportunities and Threats correspond to the environment of this organisation.

<ul style="list-style-type: none"> <li>Motivated doctoral students.</li> </ul>	indicators; <ul style="list-style-type: none"> <li>Low level of internationalisation;</li> <li>Strategic management is poorly operationalised – no clear measurable performance indicators related to the strategic objectives.</li> </ul>
<p><b>Opportunities:</b></p> <ul style="list-style-type: none"> <li>Open doctoral programme in English to attract international applicants;</li> <li>Define the strategic aim of doctoral studies and develop efficient strategy taking advantage of the strengths and addressing weaknesses;</li> <li>Develop Internationalisation strategy of doctoral studies taking full advantage of the existing cooperation agreements with foreign universities.</li> </ul>	<p><b>Threats:</b></p> <ul style="list-style-type: none"> <li>Limited financial support for doctoral studies, particularly doctoral scholarships, from the state;</li> <li>Overly bureaucratic system for managing doctoral studies (huge number of different regulations and procedures (obviously imposed by the existing legislation)), large number of decision making bodies with partially overlapping responsibilities;</li> <li>Legal restrictions contraproductive for institutionalising industrial doctorates and co-supervision of doctoral students.</li> </ul>

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

The table below includes only performance indicators with recommendations attached. All other performance criteria are fulfilled. The performance criterion C.3.1.4 could not be evaluated because of technical reasons.

No.	Type of indicator (*, C)	Performance indicator	Judgment	Recommendations
1	<b>A.2.1.2.</b>	<i>The IOSUD/doctoral school(s) has/have collaboration agreements with higher education institutions, research institutes, research networks for joint partnerships and have access for using various research infrastructures; the offer for research services is presented publicly using a dedicated platform.</i>	<b>Fulfilled</b>	Take more efficient advantage of existing cooperation agreements to initiate or become partners of joint doctoral programmes.
2	<b>B.1.1.2.</b>	<i>The IOSUD/doctoral school(s) have a policy for stimulating enrollment of doctoral students coming from disadvantaged social environments, by allocating reserved positions in the admission procedure and/or granting special scholarships, as well as organising support programs to prevent drop-outs.</i>	<b>Fulfilled</b>	The DSCE should undertake more systematic analysis of the reasons for drop-out to design adequate measures to decrease the drop-out rate, and even more importantly to increase the graduation rate.
3	<b>C.1.1.2.</b>	<i>Students' associations and,</i>	<b>Fulfilled</b>	The students need to be

		<i>according to the case, representatives of students organise elections in the community of doctoral students, for positions in the CSUD, by universal vote, direct and secret, all doctoral students having the right of electing or being elected.</i>		informed about the actions taken or planned concerning their recommendations.
4	<b>C.1.1.4.</b>	<i>Following the internal evaluation, IOSUD and the doctoral schools draft strategies and policies aiming to eliminate the identified deficiencies and to stimulate scientific and academic performance of IOSUD.</i>	<b>Partially fulfilled</b>	Complement the Strategic Plan 2020-2024 with measurable performance indicators and annual action plans.
5	<b>C.3.1.1.</b>	<i>IOSUD, for every doctoral school, 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.</i>	<b>Fulfilled</b>	1) Complement the Internationalisation Strategy with measurable performance indicators and annual action plans. 2) The Ministry of Education is invited to develop a National Strategy for Internationalisation of Higher Education.
6	<b>C.3.1.2.</b>	<i>IOSUD supports, including providing financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.</i>	<b>Fulfilled</b>	Using the opportunities of international co-supervision should be an important element of the Internationalisation Strategy for the forthcoming years, incl. relevant financial resources.
7	<b>C.3.1.4.</b>	<i>The internationalization of</i>	<b>Not</b>	Establish Doctoral

		<i>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<sup>6</sup> etc.).</i>	<b>fulfilled</b>	Programme in Chemical Engineering offered in English
--	--	--	------------------	--

## VI. Conclusions and general recommendations

The Doctoral Domain in Chemical Engineering at UBB meets most of the standards, criteria and performance indicators defined in the List of the domains, criteria, standards, performance indicators and the List of critical performance indicators for the periodical external evaluation of IOSUD. It is

The International Expert has **some general recommendations concerning the external evaluation system of doctoral schools and doctoral study programmes:**

- The criteria and performance indicators need to be reformulated into more qualitative nature better supporting strategic objectives of doctoral studies, e.g. higher graduation rate;
- The template for International Expert Reports does not consider the case where an international expert can participate only in meetings with the doctoral school, but not IOSUD (the case of evaluating UBB);
- The internal evaluation reports (self-assessment reports) should be more analytical and self-critical; the present system of criteria and performance indicators implies a bureaucratic and book-keeping oriented style of reports;
- Meetings/discussions during the site visit should be organised in a more efficient way, the number of representatives invited should be no more than 5-6 and information about the invitees should be forwarded to the expert panel members beforehand; as a rule, one person should be present in one meeting/discussion only (except the introductory and closing meeting);
- Financial aspects of doctoral studies should be better reflected in the Internal Evaluation Report, e.g. financial situation of doctoral students; analysis of the reasons for drop-out, extensions etc.;
- ARACIS should provide international experts with better overview of the wider context of evaluation, e.g. strategic development plans on the state level;
- Industrial doctorate should be clearly institutionalised;
- Co-supervision of doctoral thesis, which seems to be excluded, should be legalised;
- The Ministry of Education is invited to modernise the search engine of the national database of doctoral theses to allow searching dissertations by university, by author or title.

**Olav Aarna**

---

<sup>6</sup> Doctoral studies are completed by presenting the doctoral thesis in public session in front of a committee whose members hear and judge the final public presentation of the thesis



**International Expert, Estonia**