

## The External Evaluation Report for the establishment of the new Doctoral Study Domain “Food Engineering” at the PhD Doctoral School of Technical University of Cluj-Napoca (DS-TUCN)

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

In this chapter, the following shall be summarized:

- the context in which this external evaluation report was drafted (**the type of evaluation, the period of the evaluation visit, the composition of the Experts Committee** etc.);
- details about the doctoral school(s) of which the doctoral domain under review is part (number of doctoral advisors, number of students, institutional context, short history etc.);
- details about the doctoral study domain under review (number of students, institutional context, short history etc.).

### II. Methods used

This chapter will contain the methods and tools used in the external evaluation process, before and during the evaluation visit, including at least:

- The analysis of the internal evaluation report of the doctoral study domain under review and its Annexes;
- The analysis of documents made available by the IOSUD, in physical format, during the evaluation visit (if such documents have been requested);
- The analysis of documents, data and information available on the IOSUD/Doctoral School(s) website, in electronic format;

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



- Visiting the buildings included in the institution's property, comprising (indicative and non-exhaustive list, which shall be changed according to the context):
  - classrooms;
  - laboratories;
  - the institution's library;
  - research centers;
  - the Career Counselling and Guidance Center;
  - lecture halls for students;
  - the student residences;
  - the student cafeteria;
  - sports ground etc.;
- Meeting/discussions with doctoral students in the doctoral study domain under review;
- Meeting/Discussions with the graduates of the doctoral study domain under review;
- Meeting/Discussions with employers of the graduates in the doctoral study domain under review;
- Meeting/Discussions with the school officials of the Doctoral School(s) in which the doctoral study domain under review is operating;
- Meeting/Discussions with the doctoral advisors in the doctoral study domain under review;
- Meeting/discussions with the representatives of the various structures of the IOSUD/Doctoral School(s) in which the doctoral study domain under review is operating:
  - The Council of the Doctoral School, the University Senate, the Board of Directors, the Quality Assessment and Assurance Commission, the Quality Assurance Department, the Ethics Commission (including with the student representatives of these structures);
  - the Career Counselling and Guidance Center;
  - student organizations;
  - secretariats;
  - various departments/administrative offices (Social/Student residences-Cafeterias etc.);
- Application of questionnaires to doctoral students or academic staff in the doctoral study domain under review.

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

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

*\*general description of domain analysis.*

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

*\*general description of the criterion analysis.*

***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.***

*\*general description of the standard analysis.*

***Performance Indicator A.1.1.1. The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:***



- (a) the internal regulations of the Doctoral School;
- (b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;
- (c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);
- (d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;
- (e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;
- (f) the contract for doctoral studies;
- (g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

- The information provided in the internal report and the annexed links and documents shows that DS-TUCN has implemented the mechanisms provided for in the legislation and that has the required logistical resources.

Recommendations:

**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.

- Based on the internal report and the annexed documents and links, the doctoral school regulations satisfy this requirement

Recommendations:

**The indicator is fulfilled**

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

Based on the internal report and the annexed documents and links, the DS-TUCN has the required logistical resources

**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.

- According to the information in the Internal report, the IT system is suited to keep track of doctoral students and their academic background

Recommendations:

**The indicator is fulfilled**

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

- The software to identify possible plagiarism cases, Turnitin, is used regularly and it is reported evidence of its use.

Recommendations:



**The indicator is fulfilled**

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

*The information on this indicator comes from the internal report and from the onsite visit.*

Standard A.2.1. The DS-TUCN has a modern research infrastructure to support the conduct of doctoral studies' specific activities. The infrastructure in Baia Mare is more limited but enough to support the new program.

**Performance Indicator A.2.1.1.** The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

*- Based on the information provided and the onsite visit at research laboratories and facilities, the field of food engineering has enough modern and diverse facilities within its scientific field. Moreover, it counts on specific collaborations with foreign universities.*

Recommendations:

**The indicator is fulfilled**

**An additional recommendation for TUCN will be made in the chapter "Conclusions and General Recommendations", at the end of the report.**

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

*\*general description of the criterion analysis.*

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

*\*general description of the standard analysis.*

**Performance Indicator A.3.1.1.** Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.

*- All three doctoral supervisors in the field of food engineering comply with the minimum criteria established*

Recommendations:

**The indicator is fulfilled**

**Additional recommendations for TUCN and ARACIS will be made in the chapter "Conclusions and General Recommendations", at the end of the report.**

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



*- The satisfaction of these requirements is adequately accredited in the internal report and with the annexed documents*

*Recommendations:*

***The indicator is fulfilled***

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

*- The satisfaction of these requirements is adequately accredited in the internal report and with the annexed documents and checked during the visit.*

*Recommendations:*

***The indicator is fulfilled***

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

*\*general description of the standard analysis.*

**Performance Indicator A.3.2.1.** *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their international visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and international competitions, membership on juries or umpire teams in artistic events or international competitions.*

*- The information provided in the internal report and its annexes was complemented with more detail during the visit. All the doctoral supervisors are present in the international arena in addition to their impact with the publications.*

*Recommendations:*

***The indicator is fulfilled***

**Performance Indicator \*A.3.2.2.** *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.*

*- The satisfaction of these requirements is adequately accredited in the internal report and with the annexed documents, and during the visit. 100% of PhD supervisors fulfill the requirement.*

*Recommendations:*



*The indicator is fulfilled*

## **Domain B. EDUCATIONAL EFFECTIVENESS**

*\*general description of domain analysis.*

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

*\*general description of the criterion analysis.*

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

*\*general description of the standard analysis.*

**Performance Indicator \*B.1.2.1.** *Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

*- The satisfaction of these requirements is adequately accredited in the internal report and with the annexed documents*

*Recommendations:*

***The indicator is fulfilled***

***Additional recommendation: improve the extend and the transparency and the information provided at the web site, especially on its English version.***

### **Criterion B.2. The content of doctoral programs**

*\*general description of the criterion analysis.*

*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.*

*\*general description of the standard analysis.*

**Performance Indicator B.2.1.1.** *The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*

*- The satisfaction of these requirements is adequately accredited in the internal report and with the annexed documents*

*Recommendations:*

***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.*

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

*Recommendations:*



**The indicator is fulfilled**

**Performance Indicator B.2.1.3.** *The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes”, specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities<sup>2</sup>.*

*- The satisfaction of this requirement is adequately accredited in the internal report and with the annexed documents and checked during the visit.*

*Recommendations:*

**The indicator is fulfilled**

## **Domain C. QUALITY MANAGEMENT**

*\*general description of domain analysis.*

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

*\*general description of the criterion analysis.*

*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.*

*\*general description of the standard analysis.*

**Performance Indicator C.1.1.1.** *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

*(a) the scientific work of Doctoral advisors;*

*(b) the infrastructure and logistics necessary to carry out the research activity;*

*(c) the procedures and subsequent rules based on which doctoral studies are organized;*

*(d) the scientific activity of doctoral students;*

*(e) the training program based on advanced academic studies of doctoral students;*

*(f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.*

*- The information provided in the internal report, the annexed links and documents and the onsite visit shows that DS-TUCN has implemented the mechanisms and procedures to adequately monitor the internal quality assurance*

*Recommendations:*

**The indicator is fulfilled**

***An additional recommendation for DS-TUCN will be made in the chapter “Conclusions and General Recommendations”, at the end of the report.***

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<sup>2</sup> Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.



**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 information provided in the internal report and the annexed links and documents shows that DS-TUCN has implemented the adequate mechanisms to have feedback from the PhD students. There is not enough evidence on the Internal Evaluation report and its annexes of an Action Plan. I have found missing in the internal report some section or attached document showing evidence of concrete actions carried out from the information collected in the established feedback mechanisms.

Recommendations:

**The indicator is fulfilled**

**Additional recommendation:** It would be interesting to ask for more concrete action plans, establishing definite targets

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

*\*general description of the criterion analysis.*

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

*\*general description of the standard analysis.*

**Performance Indicator C.2.1.1.** The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:

- (a) the Doctoral School regulation;
- (b) the admission regulation;
- (c) the doctoral studies contract;
- (d) the study completion regulation including the procedure for the public presentation of the thesis;
- (e) the content of training program based on advanced academic studies;
- (f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;
- (g) the list of doctoral students within the domain with necessary information (year of registration; advisor);
- (h) information on the standards for developing the doctoral thesis;
- (i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

- I have been not able to find all this information in the English version of the web. It would be useful to develop a more complete English version of the web. From the internal report and the visit is clear enough that this information is made available to PhD students.

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.

*\*general description of the standard analysis.*

**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.

*- The satisfaction of this requirement is adequately accredited in the internal report and with the annexed documents*

Recommendations:

**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.

*- The satisfaction of this requirement is adequately accredited in the internal report and with the annexed documents*

Recommendations:

**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.

*- The satisfaction of this requirement is adequately accredited in the internal report and with the annexed documents*

Recommendations:

**The indicator is fulfilled**

#### IV. SWOT Analysis

<p><b><u>Strengths:</u></b></p> <ul style="list-style-type: none"> <li>- The quality of human resources, with a good record of international publications and scientific impact</li> <li>- The good relationship with foreign universities.</li> <li>- The good relationship with local/national companies related to food production/processing</li> </ul>	<p><b><u>Weaknesses:</u></b></p> <ul style="list-style-type: none"> <li>The premises and research infrastructure in Baia Mare are somehow limited.</li> <li>- Already identified in the Internal Report: the number of PhD supervisors is the minimum required.</li> </ul>
<p><b><u>Opportunities:</u></b></p> <ul style="list-style-type: none"> <li>- A local and national economic environment favorable to the development of the food sector</li> <li>- A good university, with international projection and national impact</li> </ul>	<p><b><u>Threats:</u></b></p> <ul style="list-style-type: none"> <li>- The low public investment in R&amp;D</li> <li>- The low private investment in R&amp;D, particularly in the area of Baia Mare.</li> <li>- Risk of no being in the core of TUCN strategy, due to the physical distance</li> </ul>



*The recommendations contained in the report shall be resumed in the indicators' analysis. Other general recommendations may be made that do not fit within a particular indicator.*

*VERY IMPORTANT!!! – Each identified weakness must be correlated with at least one recommendation to improve the situation!*

## **V. Conclusions and general recommendations**

*The organization and the definition of the set of indicators is well suited to establish the quality of the doctoral studies. Following them, my **global conclusion** about the doctoral studies in the field of FOOD ENGINEERING, attain the **adequate level of international quality**.*

*In this section, I will develop some general observations and recommendations about the field, the DS-TUCN the university and, finally, about the criteria used in the evaluation process.*

### *About the field of FOOD ENGINEERING*

*The main observation to be made is that we are in front of a good scientific team, covering adequately the range of scientific and technological applications of food engineering. Nevertheless, the team is definitively reduced in number (3 PhD habilitated supervisors), and it should develop further if it is possible.*

### *About the DS-TUCN*

*Without having a general view of the university and of its IOSUD, from the information given in the Internal report of the Food Engineering field, the corresponding annexes and links and the onsite visit, there is some risk of automatization of the quality assurance processes and methodologies that can affect the quality of the doctoral education. DS-TUCN can consider putting emphasis on the monitoring of the attainment of transversal skills and competences and also on the design and monitoring of activities addressed to all PhD students, seeking for the reinforcement of the collegial character of the Doctoral School.*

### *About the TUCN*

*TUCN is a research focused university, with good international recognition in its fields of specialization. The research impact is relatively good and has a good position within the Romanian system. When visiting the research laboratories, it has become clear that the competitiveness of the academic staff allows the university to obtain funds for acquiring adequate research infrastructure. At the same time, this infrastructure is limited to the capacity of attracting those funds, which implies some kind of glass ceiling on the dimension of research equipment available to researchers. It would be recommended that the university put in place a centralized research and technological service center that, in coordination with the capacity of research teams, would be able to plan the acquisition of research equipment and research platforms, and its maintenance, unavailable nowadays for individual research groups.*



Finally, the new doctoral field is expected to develop in Baia Mare, where the research infrastructures are more limited than in Cluj. **TUCN can consider having a specific investment plan to develop differentially the Baia Mare premises and research infrastructure (weakness 1).** Also, the number of habilitated academic staff is low and **TUCN can consider encouraging/incentivizing an increase of number of habilitated professors in the field of Food Engineering in Baia Mare (weakness 2).**

#### About the criteria used by ARACIS

The information provided is very complete and, when necessary, it has been supplemented with great diligence. The criteria are meaningful and suited to check that the quality of the PhD education is assured. But hardly an indicator can be found that refers to the appropriate dimensions of the system under study, both in terms of extension and results. Particularly, the minimum value of three doctoral thesis advisors (criterion A.3.1.1) can promote an excessive fragmentation of doctoral schools in scientific domains. It would be convenient that the ARACIS evaluation includes some indicators related to the expected dimensions of a domain/doctoral school, which would help to establish the extent to which the university and each doctoral school is fulfilling its mission.