AQAS

AGENTUR FÜR
QUALITÄTSSICHERUNG DURCH
AKKREDITIERUNG VON
STUDIENGÄNGEN E.V.

FINAL REPORT

UNIVERSIDAD DE LA FRONTERA

CLUSTER NATURAL SCIENCES PHD

SCIENCE, SPECIALISED IN APPLIED CELLULAR AND MOLECULAR BIOLOGY (PHD)

ENGINEERING SCIENCES WITH A SPECIALISATION IN BIOPROCESS (PHD)

AGRI-FOOD AND THE ENVIRONMENTAL SCIENCES (PHD)

NATURAL RESOURCES SCIENCES (PHD)

June 2025

Content

DECISION OF THE AQAS STANDING COMMISSION

ON THE STUDY PROGRAMMES

- **SCIENCE, SPECIALISED IN APPLIED CELLULAR AND MOLECULAR BIOLOGY (PHD)**
- **ENGINEERING SCIENCES WITH A SPECIALISATION IN BIOPROCESS (PHD)**
- **AGRI-FOOD AND THE ENVIRONMENTAL SCIENCES (PHD)**
- **NATURAL RESOURCES SCIENCES (PHD)**

OFFERED BY UNIVERSIDAD DE LA FRONTERA (CHILE)

Based on the report of the expert panel, the comments by the university and the discussions of the AQAS Standing Commission in its 25th meeting on 19 May 2025, the AQAS Standing Commission decides:

1. The study programmes **"Science, specialised in Applied Cellular and Molecular Biology" (PhD), "Engineering Sciences with a specialisation in Bioprocess" (PhD), "Agri-Food and the Environmental Sciences" (PhD)**, and **"Natural Resources Sciences" (PhD)** offered by Universidad de la Frontera, Chile, are accredited according to the AQAS Criteria for Doctoral Programme Accreditation (PhD).
2. The accreditations are conditional.
3. The study programmes essentially comply with the requirements defined by the criteria and thus the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and the European Qualifications Framework (EQF) in their current version. The required adjustments can be implemented within a time period of twelve months.
4. The conditions have to be fulfilled. The fulfilment of the conditions has to be documented and reported to AQAS no later than 31 May 2026. The confirmation of the conditions might include a physical site visit within the time period of twelve months.
5. The accreditation is given for the period of six years and is valid until 31 May 2031, provided that the conditions listed below are fully met. Otherwise, the accreditation may be withdrawn.

Conditions:

<u>For all study programmes:</u>

1. The University has to present an analysis of expected and realised student workload and implement measures reducing the risk of overburdening workload causing burnout.

<u>Additionally for the study programme "Engineering Sciences with a specialisation in Bioprocess":</u>

2. Admission requirements for the PhD programme "Engineering Sciences with a specialisation in Bioprocess" need clear differentiation between mandatory and recommended criteria.

The following **recommendations** are given for further improvement of the programmes:

For all study programmes:

1. The appeals process for the assessment should be made known to the candidates.
2. The curricula should include modules on spin-offs and soft skill development to provide opportunities to improve the required skills for academic presentation and writing.
3. Student representation should be increased/ensured across programmes and their representation and or active involvement in decision-making committees should be ensured.
4. The postgraduate school should implement a robust framework to ensure harmonization/uniformity in structure and QA instruments/approaches across its doctoral programmes.
5. Efforts to significantly enhance collaboration with industry should be further strengthened.
6. UFRO should consider a more comparable and standardized public information about its programmes and admission requirements.
7. Beyond the currently implemented practice, multi-lingual diploma supplements should be provided as a standard practice upon graduation.
8. Measures should be established to rigorously support the development of further English proficiency among teaching staff.
9. Initiatives such as the "PhD Day" should be further developed and supported to foster and facilitate further increase in cross-disciplinary interaction and allow for greater visibility of the programmes.
10. Research lines should be clearly mapped to the expertise of the teaching body across all programmes in publicly available information.

Additionally for the study programme “Engineering Sciences with a specialisation in Bioprocess”:

11. It should be considered further developing the programme in line with current developments in the labour market and non-academic industry needs.

Additionally for the study programme “Natural Resources Sciences”:

12. The programme should provide a broader range of elective subjects to allow for greater academic and professional specialisation.

With regard to the reasons for this decision the Standing Commission refers to the attached experts’ report.

EXPERTS' REPORT

ON THE STUDY PROGRAMMES

- **SCIENCE, SPECIALISED IN APPLIED CELLULAR AND MOLECULAR BIOLOGY (PHD)**
- **ENGINEERING SCIENCES WITH A SPECIALISATION IN BIOPROCESS (PHD)**
- **AGRI-FOOD AND THE ENVIRONMENTAL SCIENCES (PHD)**
- **NATURAL RESOURCES SCIENCES (PHD)**

OFFERED BY UNIVERSIDAD DE LA FRONTERA (CHILE)

Visit to the university: 27 – 29 November 2024

Panel of experts:

Prof. Dr. Maroun Khoury	Universidad de los Andes (Chile), Centre for Research and Biomedicine Innovation
Prof. Dr. Heike Knicker	Universidad de Sevilla (Spain), Institute of Natural Resources and Agrobiology of Seville (IRNAS), Department of Soil Science
Prof. Dr. Sebastià Puig Broch	Universitat de Girona (Spain), Faculty of Sciences, LEQUIA Laboratory of Chemical and Environmental Engineering
Prof. Dr. Gerardo Puopolo	Università di Trento (Italy), Centre for Agriculture Food Environment
Dr. Nadina Stadler	Independent cross-border biomedical research consultant (Germany) (Labour market representative)
Juliane Lukas	PhD student at Humboldt University Berlin (Germany) (Student representative)

Coordinator:

Patrick Heinzer / Ronny Heintze	AQAS, Cologne, Germany

I. Preamble

AQAS – Agency for Quality Assurance through Accreditation of Study Programmes – is an independent non-profit organisation supported by nearly 90 universities, universities of applied sciences, and academic associations. Since 2002, the agency has been recognised by the German Accreditation Council (GAC). It is, therefore, a notified body for the accreditation of higher education institutions and programmes in Germany.

AQAS is a full member of ENQA and also listed in the European Quality Assurance Register for Higher Education (EQAR) which confirms that our procedures comply with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), on which all Bologna countries agreed as a basis for internal and external quality assurance.

AQAS is an institution founded by and working for higher education institutions and academic associations. The agency is devoted to quality assurance and quality development of academic studies and higher education institutions' teaching. In line with AQAS' mission statement, the official bodies in Germany and Europe (GAC and EQAR) approved that the activities of AQAS in accreditation are neither limited to specific academic disciplines or degrees nor a particular type of higher education institution.

II. Accreditation procedure

This report results from the external review of the PhD programmes "Science, specialised in Applied Cellular and Molecular Biology" (PhD), "Engineering Sciences with a specialisation in Bioprocess" (PhD), "Agri-Food and the Environmental Sciences" (PhD), and "Natural Resources Sciences" (PhD) offered by Universidad de la Frontera (Chile).

1. Criteria

Each programme is assessed against a set of criteria for accreditation developed by AQAS: the AQAS Criteria for Doctoral Programme Accreditation (PhD). The criteria are based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) 2015. To facilitate the review each criterion features a set of indicators that can be used to demonstrate the fulfilment of the criteria. However, if single indicators are not fulfilled this does not automatically mean that a criterion is not met. The indicators need to be discussed in the context of each programme since not all indicators can necessarily be applied to every programme.

2. Approach and methodology

Initialisation

The university mandated AQAS to perform the accreditation procedure in August 2023. The university produced a Self-Evaluation Report (SER). In January 2024, the institution handed in a draft of the SER together with the relevant documentation on the programmes and an appendix and statistical data on the programmes. The appendix included, e.g.:

- an overview of statistical data of the student body (e.g. number of applications, beginners, students, graduates, student dropouts),
- the CVs of the teaching staff/supervisors,
- information on student services,
- core information on the main library,

- as well as academic regulations.

AQAS checked the SER regarding completeness, comprehensibility, and transparency. The accreditation procedure was officially initialised by a decision of the AQAS Standing Commission on 26 February 2024. The final version of the SER was handed in in August 2024.

Nomination of the expert panel

The composition of the panel of experts follows the stakeholder principle. Consequently, representatives from the respective disciplines, the labour market, and students are involved. Furthermore, AQAS follows the principles for the selection of experts defined by the European Consortium for Accreditation (ECA). The Standing Commission nominated the aforementioned expert panel in October 2024. AQAS informed the university about the members of the expert panel and the university did not raise any concerns against the composition of the panel.

Preparation of the site visit

Prior to the site visit, the experts reviewed the SER and submitted a short preliminary statement including open questions and potential needs for additional information. AQAS forwarded these preliminary statements to the university and to all panel members in order to increase transparency in the process and the upcoming discussions during the site visit.

Site visit

After a review of the SER, a site visit to the university took place from 27 – 29 November 2024. On site, the experts interviewed different stakeholders, e.g. representatives of the management of the higher education institution, the programme management, of teaching and of other staff, as well as students and graduates, in separate discussion rounds and consulted additional documentation as well as student work. The visit concluded with the presentation of the preliminary findings of the group of experts to the university's representatives.

Reporting

After the site visit had taken place, the expert group drafted the following report, assessing the fulfilment of the AQAS Criteria. The report included a recommendation to the AQAS Standing Commission. The report was sent to the university for comments.

Decision

The report, together with the comments of the university, forms the basis for the AQAS Standing Commission to take a decision regarding the accreditation of the programmes. Based on these two documents, the AQAS Standing Commission took its decision on the accreditation on 21 May 2025. AQAS forwarded the decision to the university. The university had the right to appeal against the decision or any of the imposed conditions.

In June 2025, AQAS published the report, the result of the accreditation as well as the names of the panel members.

III. General information on the university

1. Chilean higher education context

According to the self-evaluation report (SER), doctoral education in Chile has traditionally been oriented towards basic sciences, with a focus on academic and research pursuits, as detailed by the Chilean National Accreditation Commission (CNA). This preparation is positioned as a gateway to academic employment in universities. However, recent trends, as highlighted in the SER, indicate a notable shift towards initiatives emphasising societal impact through collaborations between universities, the state, and industry.

The university asserts that the structure of Chilean PhD programmes generally involves an academic cycle, qualifying exams, research projects, and a thesis defence leading to the award of a Doctorate degree. Following the SER, the training demands are specifically outlined by the Chilean National Accreditation Commission, requiring 240 transferable credits or an equivalent of 5,760 hours, with an average programme duration of four years.

According to the self-assessment report, the professional trajectories of Chilean Doctorate holders, as reported by the Ministry of Science, Technology, Knowledge, and Innovation in 2021, reveal that 18,352 Doctorate degrees were awarded, with 37% going to women. The university emphasises that the majority earned their degrees domestically, and according to the SAR, the average age of Doctorate holders is 45 years. Notably, the SAR indicates a lower proportion of Doctorate holders in Chile compared to OECD averages, with natural sciences being the most pursued field.

The university further states that in terms of funding, state support is the primary source for student finances, and according to the SAR, the unemployment rate among Doctorate holders in 2019 was 3.2%. However, as highlighted in the SAR, gender wage gaps persist, with men earning significantly more than women, and a higher unemployment rate for women compared to men.

Following the self-assessment report, quality assurance measures were implemented in 2018, mandating the accreditation of PhD programmes in Chile. As of 2022, there were 325 programmes, with 80% being accredited, as reported by the university. Specifically, the Universidad de La Frontera offers eleven accredited PhD programmes as of 2023.

2. Structure of Universidad de la Frontera

According to the SER, the governing structure of Universidad de La Frontera is comprised of the Board of Directors, the Academic Council, and various Vice-Rectors overseeing distinct aspects of the university's operations.

The university states that the Board of Directors, considered the paramount governing body, consists of three academics appointed by the Academic Council, three external professionals, and three government representatives. The president (Rector) and Secretary-General, though members, lack voting rights. Following the SER, the Rector, as the senior executive, oversees all academic, administrative, and financial operations, acting as the principal liaison between the Board and university entities.

According to the self-evaluation report, the Academic Council, led by the Rector, includes the Academic Vice-Rector, faculty Deans, and representatives from specific faculties. Additionally, the SER notes that the President of the Association of Academics and the President of the Association of Officials have speaking rights.

The university further states that the Academic Vice-Rector manages academic functions and services, proposing policies related to teaching, evaluation, ranking, and outreach. According to the SER, the Vice-Rector

for Research and Postgraduate Studies focuses on research, postgraduate studies, and international collaborations, overseeing the Postgraduate Academic and Research Directorates.

According to the self-evaluation report, the Vice-Rector of Undergraduate Studies advocates for quality in undergraduate programmes, emphasizing comprehensive training, curriculum updates, and alumni connections. The university states, following the SER, that the Vice-Rector for Administration and Finance implements policies regarding the university's financial, administrative, and physical resources.

Following the self-evaluation report, the Secretary General is responsible for academic records, documentation, degree processes, and authentication, while, as indicated by the SER, the Comptroller oversees internal audit, ensuring legal and proper financial conduct. According to the SER, the university's academic organization is rooted in its departments, faculties, and schools, as established by the UFRO' Statute.

3. Faculties of the PhD programmes

According to the self-evaluation report (SER), the PhD programmes highlighted in this report are primarily associated with departments within the Faculty of Engineering and Sciences and the Faculty of Agricultural Sciences and Environment.

The university states that the Faculty of Engineering and Sciences, being the largest academic unit at Universidad de La Frontera, significantly contributes to the development of the southern macro-region of Chile. Through diverse undergraduate and postgraduate teaching programmes, research, and community engagement, the faculty makes substantial contributions in emerging areas such as renewable energy, biofuels, telecommunications, informatics, environmental science, mathematical modelling, and various other disciplines. As detailed in the SER, the faculty employs 196 full-time equivalent academic and professional teaching staff, totalling 217 individuals. Among this teaching staff, 57.4% hold doctoral degrees, 19.3% have master's degrees, and the remainder are professionals. According to the SER, 90.8% work full-time, 4.9% are part-time, and 4.4% work on an hourly basis. In terms of gender distribution, the SER indicates that 72.5% are male, and 27.5% are female.

On the other hand, the SER reports that the Faculty of Agricultural Sciences and Environment, established in 1982, aims to train highly qualified professionals and postgraduates and to generate and transfer scientific and technological knowledge in agriculture, forestry, renewable natural resources, and biotechnology. The faculty maintains continuous engagement with the community to contribute to the growth and sustainable development of the local community, the region, and the country. According to the SER, the faculty has 43 full-time equivalent academic and professional teaching staff, corresponding to 46 individuals. Among this teaching staff, 66.9% hold doctoral degrees, 12.2% have master's degrees, and 20.9% are professionals. As reported in the SER, 92.9% work full-time, 2.3% are part-time, and 4.8% work on an hourly basis. In terms of gender distribution, the SER indicates that 73.9% are male, while 26.12% are female.

Regarding the student body, the SER notes that postgraduate enrolment at Universidad de La Frontera averages a total of 900 regular students, distributed across various levels of training and areas of knowledge, such as Business and Commerce, Agricultural Sciences, Basic Sciences, Social Sciences, Education, Health Sciences, and Technology. The SER outlines that in 2023 162 new Master's students, 56 PhD students, 34 medical speciality students, and 13 dental specialty students were enrolled.

IV. Assessment of the study programmes

1. Aims and structure of the doctoral programme

Doctoral degree

The intended learning outcomes of the programme are defined and available in published form. They reflect both academic and labour-market requirements and are up-to-date with relation to the relevant field. The design of the programme supports the achievement of the intended learning outcomes.

The academic level of graduates corresponds to with the requirements of the appropriate level of the national qualifications framework or the European Qualifications Framework.

The curriculum's design is readily available and transparently formulated.

[ESG 1.2]

General structure of PhD programmes at UFRO

Design of ILOs

According to the self-evaluation report (SER), the definition of specific competencies or qualifications for Postgraduate Programmes at Universidad de La Frontera takes into account the National Qualifications Framework (NQF) for Higher Education. The documentation in the SER includes the Chilean Qualifications Framework in its current version.

As articulated in the NQF, the SER highlights that the PhD degree is defined as an academic certification that attests to the graduate's demonstration of specialized theoretical and practical knowledge at the forefront of a disciplinary area and advanced knowledge in related disciplines. Furthermore, the SER emphasizes that the PhD degree signifies evaluation and integration skills that enable graduates to conceptualize, problematize, and issue well-founded judgments. Additionally, the NQF outlines that Doctoral graduates possess the ability to design solutions to problems in uncertain contexts and generate knowledge contributing to the advancement of a disciplinary area. The SER further highlights that PhD holders are equipped with the ability to perform autonomously in research, innovation, or artistic creation within their disciplinary area.

According to the self-evaluation report (SER), qualifications at Level 5, corresponding to a PhD, encompass a comprehensive understanding of knowledge, skills, and competencies. The SER underlines that individuals at this level demonstrate theoretical and practical knowledge at the forefront of a study or work area and advanced knowledge in disciplines related to the PhD programmes offered at Universidad de La Frontera.

Skills at this level, as articulated in the SER, include cognitive, technical, and communication abilities that empower individuals to evaluate and integrate diverse information for conceptualization, problematization, and well-founded judgments. Moreover, individuals can solve problems in uncertain contexts, generate knowledge contributing to the advancement of a study or work area, create products, execute procedures, develop processes, and conduct original research, innovation, or artistic creation using material resources. Additionally, effective communication and argumentation of research, innovation, or artistic creation results in Spanish and a second language are emphasized.

Competencies at this level, as outlined in the SER, involve the application of knowledge and skills with a focus on responsibility, ethics, and autonomy. Graduates are expected to assume the implications of their work results and those of their group, engaging in critical dialogues. They are further equipped to make decisions and perform in research, innovation, or artistic creation, lead teams to achieve common goals, and respect socio-economic, cultural, ethnic, gender, nationality, and religious diversity.

The SER further highlights that the Doctoral Programmes at Universidad de La Frontera have effectively ensured the acquisition and demonstration of theoretical and practical knowledge at the forefront of their

respective study areas. This accomplishment is attributed to the application of advanced knowledge in curricular activities, research lines, specialization courses, participation in research groups, cotutelles with national and international agreements, and involvement in Chilean projects (e.g., ANID/FONDECYT, PIA-ANID/ANILLOS).

Concerning the transmission of competencies, the SER notes that the PhD programmes have concentrated efforts on developing cognitive, technical, and communication skills to promote disciplinary competencies applied to research, innovation, or knowledge transfer. The institutional educational model, as described in the SER, utilizes a competency-based approach, emphasizing a person-centred approach and comprehensive training.

The institutional educational model, as outlined in the SER, incorporates three types of competencies: pillar competencies guiding the formative and participative actions within the institution, specific competencies corresponding to expected performance in a specific disciplinary area and constituting the identity of the professional or graduate, and generic competencies applicable to any professional area and transferable to different contexts. Generic competencies identified by the institution include autonomy, communication, ethics and social responsibility, teamwork, and critical thinking.

Graduation profile/Employability

The SER emphasizes that each programme's graduation profile delineates the domains and disciplinary and generic competencies it aims to develop. This is achieved through a competency matrix, indicating how curricular activities contribute to specific competencies and learning outcomes, facilitating the articulation between different subjects in the study plan.

In terms of employability, UFRO Alumni, established in 2020 and falling under the Directorate of Integral Formation and Employability (DIFEM), offers various programmes as detailed in the SER. These programmes include initiatives such as "Prepare for your professional future," consisting of eight 100% asynchronous, virtual courses covering various topics, and "Training Workshops for the World of Work," conducted every Thursday to develop generic competencies and facilitate workforce integration. Additionally, the SER mentions "Alumni Tools," offering assistance in creating valuable resources for professional presentation during the transition to the workforce. Professional Orientation, a personalized space for alumni, provides support from a professional to identify personal strengths and tools for career management. Labour Preparedness Days, as detailed in the SER, provide practical and intensive work focused on alumni seeking to enhance their personal brand and professional profile, offering differentiating tools and resources for an effective job search. The SER also highlights "Tips for Job Searching" as part of UFRO Alumni's employability-focused programmes.

Credit workload

According to the self-evaluation report (SER), Universidad de La Frontera utilises a Transferable Credit System (SCT-Chile) at the institutional level to gauge the workload of its programmes. This system, as outlined in the SER, utilises credits to measure the average time students dedicate to achieving expected learning outcomes in each curricular activity of the study plan. The SER underscores that the determination of these credits relies on an "academic workload estimation," involving input from both students and teachers of each subject regarding the time devoted to it.

As specified in the Institutional Regulations for Postgraduate Programmes at Universidad de La Frontera, the SER notes that 1 SCT is equivalent to 28 chronological hours. This includes both contact hours, referring to the time students spend in structured educational environments under the direct supervision of a teacher or instructor, encompassing lectures, tutorials, seminars, lab sessions, and other face-to-face teaching; and independent study hours, which entails the time students are expected to dedicate to independent study,

research, assignments, or any other learning activities outside of scheduled contact hours. This encompasses various learning activities, such as reading, writing, problem-solving, and preparation for classes or exams.

The SER highlights that the SCT-Chile workload allows for equivalence with studies in other countries, such as the European Credit Transfer and Accumulation System (ECTS) model, which shares the same credit definition and calculation basis (60 annual credits) as the Chilean system.

According to the SER, the University mandates that its doctoral programmes express their academic workload in the Chilean Transferable Credit System (SCT-Chile). This system, as per the SER, aims to enhance programme readability and facilitate the transfer of academic credits between institutions, thereby promoting student mobility.

1.1 Science with a specialisation in Applied Cellular and Molecular Biology (PhD)

Description

Graduation profile

The documentation includes a graduation profile which is documented as follows:

a) To train researchers capable of understanding and addressing complex biological processes within the disciplines of cellular and molecular biology to obtain original results, protect developed knowledge, and disseminate it to the scientific community in an ethical and professional manner,

b) To develop research based on solid methodologies and focused on priority problems with high applied potential in cellular and molecular biology across various areas of knowledge such as bioresources, biomedicine, and biotechnology, and

c) To promote and develop international cooperation with centres of excellence, maintaining active academic and scientific exchange for the production of knowledge and solutions to global challenges in the field.

The SER states that the programme and especially the PhD thesis serves as a platform to develop research skills, complemented by the requirement of two publications to refine communication abilities. These initiatives, alongside internships, conference participation, and laboratory work, are envisioned to enhance employability by nurturing researchers. In addition and to bolster the professional prospects and employability of PhD students, the programme has initiated various measures. These include integrating the compulsory course 'Management of Emerging Technologies' to impart skills in intellectual property transfer and protection, facilitating the establishment of enterprises from innovative research. Professionals from the Directorate of Innovation and Technological Transfer are engaged to enhance understanding of intellectual property and project application aspects. International workshops focusing on bridging the Academia-Industry gap and exploring opportunities in Research and Applied Science are organised. Partnerships with biotechnological firms, foundations, and institutes have been established to foster collaboration between students, academia, and the production sector. Monthly online seminars titled 'Academia and Industry: A Necessary Dialogue' have been hosted since 2021. Informational sessions for students on Development and Innovation opportunities, including initiatives like the Trampolin Lab, aim to catalyse scientific-technological entrepreneurship among postgraduate students, thus amplifying the success probabilities of scientific ventures originating from PhD theses.

Intended learning outcomes on the programme level

According to the SER, the PhD programme “Science with a specialisation in Applied Cellular and Molecular Biology” is delivered as an in-person full-time daytime study programme. The university states that its overarching aim is to cultivate highly skilled science graduates with autonomous, critical, and innovative research capabilities. Following the SER, these competencies empower them to effectively lead and integrate scientific

and technological research teams, demonstrating proficiency and creativity in the realm of applied cellular and molecular biology.

The SER outlines that graduates of the PhD programme will possess the ability to: (1) Develop innovative research projects generating new scientific and/or technological knowledge and (2) Transfer knowledge in the field and research results that contribute to, and impact the sustainable development and well-being of the region and society. The university states that graduates receive training in biological sciences, with a focus on biomedicine, reproductive biology, and biotechnology of bioresources.

The SER specifically outlines that the programme includes five intended learning outcomes on the programme level, which are stated as follows and refer to the two overarching abilities as mentioned above:

1.1. Conduct original research in cellular and molecular biology using cutting-edge methodologies, contributing to the creation of new knowledge while respecting ethical principles and sustainable use of bioresources.

1.2. Manage innovative solutions to priority problems within the discipline, region, or productive sector.

2.1. Present disciplinary knowledge and research results orally and in writing to specialized and non-specialized audiences.

2.2. Manage the publication of scientific articles in internationally recognized journals based on disciplinary knowledge or research results.

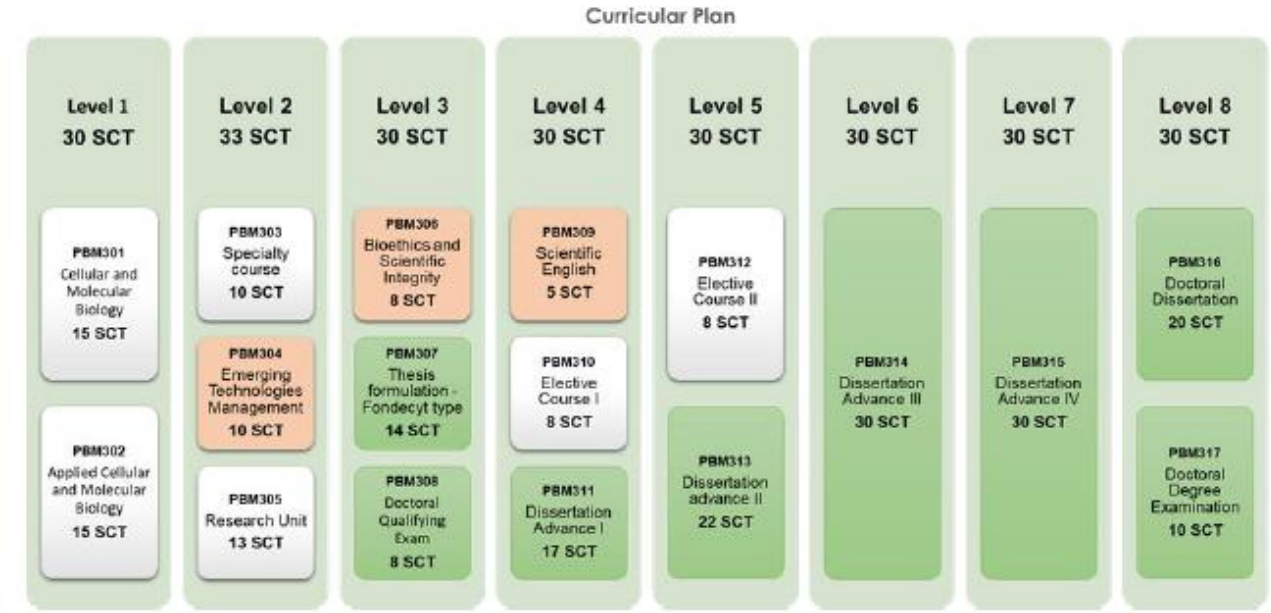
2.3. Apply strategies for the transference and protection of intellectual property to safeguard innovative research results.

According to the SER, the graduates demonstrate critical thinking, autonomy, and the ability to work with social responsibility and ethics, integrating multidisciplinary research teams. With their academic training, they are qualified to work in public or private higher education institutions and national and international scientific and technological research centres.

It is stated that this profile aligns with the educational activities undertaken and conforms to the definition of a Doctorate as per the National Qualifications Framework for Higher Education of MINEDUC (Chilean Ministry of Education).

Curriculum

The curriculum plan for the programme spans four academic years, operating on a semester basis. It comprises two fundamental subjects, six specialised activities, two electives, and seven qualifying activities necessary for degree completion, including the Qualifying Examination (Semester 3), Doctoral Thesis Progress I-IV (Semester 4-7), Doctoral Thesis (Semester 8), and Degree Examination (Semester 8). The programme entails 2,700 hours of direct teaching and 4,100 hours of independent student work, totalling 6,800 chronological hours, equivalent to 243 ECTS credits. The documentation includes an overview of the courses as shown here:



The SER states that the programme operates with compulsory courses exclusive to enrolled students, while elective or specialisation courses may be pursued within the institution or at other national universities, albeit without formal linkage to other undergraduate or postgraduate programmes.

The programme's structure and stages are detailed in the programme regulations annexed to the documentation, requiring a research contribution to designated areas with emphasis on creativity, originality, and objectivity, overseen by a dissertation advisor. Following submission, the thesis undergoes evaluation within four weeks by a committee, grading it on a scale from 1.0 to 7.0. Approval, with or without modifications, or rejection are possible outcomes, with a passing grade set at 5.0. Additionally, the candidate must submit two articles derived from the Thesis, one accepted and the other under review in WoS-indexed journals. Progress reports are presented to a Thesis Evaluation Committee, leading to the final submission of the Degree Thesis. Students are engaged in qualification exams, progress reviews, and research lines, overseen by the programme's academic committee. The Qualifying Examination Committee composition is approved by the Programme's Academic Committee, comprising internal and external evaluators, with all involved parties reported to the Postgraduate Academic Directorate (DAP). Following the qualifying examination, the committee transitions to the Thesis Evaluation Committee.

Experts' evaluation

From the experts' point of view, it can be confirmed that the programme presents its qualifications as intended learning outcomes that effectively balance subject-specific knowledge with interdisciplinary elements. The integration of courses such as Management of Emerging Technologies, Bioethics and Scientific Integrity demonstrates a commitment to developing researchers with both specialized expertise and broader intellectual capabilities. In the future it might be considered to enhance the learning outcomes to address more explicitly transferable skills needed for increasing access to diverse career paths. While the academic foundations are strong, discussions with graduates and industry representatives reveal that there is still a gap between academic excellence and full workplace readiness.

The curriculum partially reflects labour market requirements through webinars with industry and international workshops. Yet, as indicated by graduate feedback, a disconnect remains between academic training and industry expectations. The Chilean context, where industry traditionally undervalues research expertise, creates additional challenges for graduate employability. In this context, the establishment of a Technology

Transfer Office shows institutional commitment to bridging the academic-industry divide. Also, the validation process for updating learning outcomes includes/incorporates stakeholder input, although the formalization of this process could be further developed in the future.

The programme structure supports learning progression through a balance of theoretical coursework and practical research experience. It is very positive that students engage with laboratory work from the first semester, developing technical skills under supervision. However, student feedback suggests a slight imbalance, with many advocating for fewer mandatory courses and more research-focused activities. This feedback might be a relevant indicator for the internal Quality Assurance and further developing of the programme. The time-plan and milestone framework is in place but could benefit from clearer articulation. While the programme provides flexibility for health or personal issues (allowing semester breaks with academic committee approval), the experts panel encourages to continue the debate initiated during the site visit regarding more structured progression markers that could enhance student guidance and transparency in the progress.

As a clearly strong point, the curriculum effectively covers subject-specific knowledge across three core areas: molecular and cellular biology, biotechnology, and bioresearch. The alignment with CNA accreditation criteria ensures comprehensive coverage of the discipline. Cross-subject knowledge is addressed through courses like Bioethics, but two critical areas require strengthening:

One of the key concerns of the panel of experts regarding the achievement of an internationally competitive PhD level is the vagueness regarding English language skills upon graduation. While encouraged, English is not mandatory, creating barriers to international publication and collaboration. Students themselves identify this as a significant limitation, particularly with regard to speaking skills. They express unease about submitting abstracts for oral presentation at international conferences and prefer to present only posters. Consequently, the panel of experts concludes that English language skills must be integrated as mandatory elements in the programme, while the definition of what is contextually realistic and achievable remains with UFRO (**Finding 1**). It is therefore recommended that English language proficiency is developed in areas such as academic writing for international journals, conference presentation skills, fluency in scientific discussion, collaborative research communication, networking and laymen outreach, interview training in English (to prepare for future international jobs), or pitching. This aligns with global academic practices and will significantly enhance graduate competitiveness in the international research community.

Furthermore, the curriculum should include modules on biotech entrepreneurship, spin-offs, and soft skill development (**Finding 2**). Graduates report feeling underprepared for non-academic career paths. While their research capabilities are strong, they lack the entrepreneurial mindset and professional skills needed for diverse employment opportunities. Further training could be provided in modules on e.g., research value proposition, commercialization and spin-off creation, innovation management, leadership and teamwork, project management, career development strategies, or understanding of business models. These additions would transform graduates from specialized researchers into versatile professionals capable of translating academic knowledge into practical impact. The programme facilitates international exposure through institutional and personal networks, enabling student exchanges and international co-supervision. Credit transfer systems support taking courses at other institutions. Student experiences at international conferences and exchanges (Toronto, Groningen) demonstrate the value of these opportunities. Knowledge transfer beyond academic contexts remains challenging. While the Technology Transfer Office and industry webinars represent progress, more structured mechanisms for translating research into practical applications are needed.

Recent curriculum modifications have been documented transparently through Exempt Resolution 1441 and the Platform for Monitoring and Evaluation of Development Plans (SEPLAD). From the expert's point of view these changes have contributed to the improvement of the programme quality, particularly in estimating academic workload in SCT-Chile, updating the graduation profile, allowing student participation in the academic

committee, and including foreign professors as external evaluators. The panel of experts can also confirm that the programme and the demonstrated and analysed graduate work achieves level eight of the EQF and thus clearly meets PhD requirements. The doctoral programme demonstrates substantial progress in curriculum development while also maintaining some areas for enhancement. By implementing mandatory spoken English language components and developing soft skills and entrepreneurship modules, the programme would significantly strengthen its alignment with international standards and diverse career pathways. These improvements would transform an already strong research-focused programme into a comprehensive educational experience that truly prepares graduates for global academic excellence and meaningful societal impact.

Conclusion

The criterion is partially fulfilled.

1.2 Engineering Sciences (specialization in Bioprocess) (PhD)

Description

Graduation profile

The annexed programme regulations clarify that the PhD programme “Engineering Sciences (specialization in Bioprocess)” defines disciplinary competencies such as developing original and cutting-edge research, proposing innovative solutions, and effectively communicating research results, alongside generic competences like working with others, autonomously, responsibly, and ethically. This profile applies to the areas of Food Bioprocesses and Environmental Bioprocesses, encompassing roles in both public and private research and development units, as well as higher education institutions. Emphasising autonomy, teamwork, and ethics, the Graduation Profile is disseminated through course programmes, the programme's website, and the virtual campus. Supported by the programme's training activities, it aligns with the University and the Faculty of Engineering and Sciences' mission and conforms to the definition of a Doctorate according to the National Framework of Qualifications for Higher Education by the Ministry of Education.

UFRO states that the graduate profile underwent review in line with the guidelines of the National Framework of Qualifications for Higher Education and the General Regulations for Doctorates, which is annexed to the documentation. This review received internal and external validation and was facilitated by the Office of Postgraduate Curriculum Design and Management of the Postgraduate Academic Directorate.

Intended learning outcomes on the programme level

According to the annexed study plan and programme regulations, the programme aims to train researchers capable of independently, collaboratively, and ethically proposing and conducting original and relevant research in environmental and food bioprocesses, with outcomes that contribute to knowledge. As specific objectives, they include training doctors to propose and develop scientific and technological research, contributing to regional and national development in declared programme areas, as well as fostering the generation of frontier knowledge in environmental and food bioprocess research areas.

The same document includes a paragraph outlining the disciplinary and generic competencies of the programme.

The disciplinary competencies involve the ability to:

- Develop original research contributing to frontier knowledge in declared programme research areas.
- Propose innovative solutions within environmental or food bioprocesses.

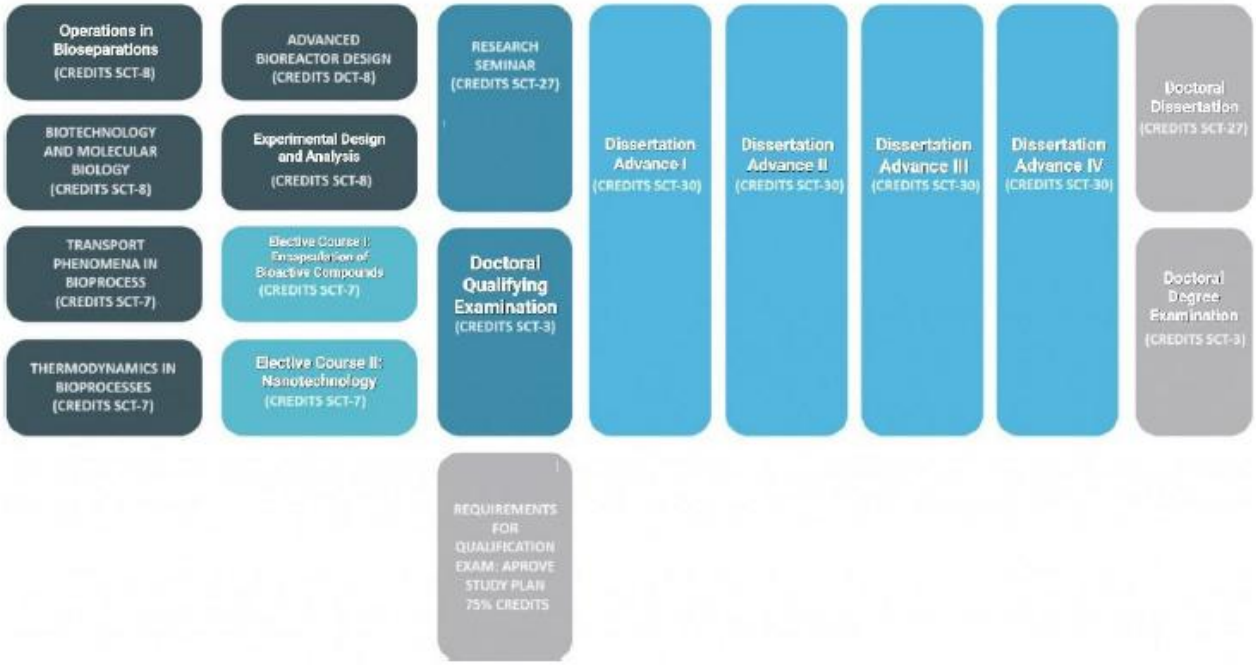
- Effectively communicate research findings through written and oral means in scientific dissemination media.

While the generic competencies include:

- Working with others: Collaborating within teams to achieve shared objectives and foster cooperative relationships.
- Ethics and responsibility: Adhering to performance protocols and standards while acknowledging the implications of individual and group work.
- Autonomy: Demonstrating proactive behaviour, continuously evaluating one's work, and making decisions to enhance professional performance.

Curriculum

The SER includes an overview of the curriculum for the PhD programme. The overview is displayed as follows:



Further development of the curriculum

As part of the commitments made during the last accreditation with the Chilean National Accreditation Commission (CNA), the programme implemented several improvements in programme management. These included the implementation of a monitoring plan in the Platform for Monitoring and Evaluation of Development Plans and the establishment of a continuous improvement team to execute the annual action plan. A pilot project with the PhD programme enabled access to curriculum activity programmes through the intranet, involving the review of course programmes and the development of competence assessment rubrics. The programme also redesigned its website to enhance visualization of activities, created a promotional video, and established a social media presence. There was an increased participation of faculty members as thesis advisors and in teaching mandatory and elective specialty courses. Documents and flowcharts for programme activity dissemination, student admission procedures, and graduate tracking procedures were developed with support from the Quality and Process Management Coordinator. Workshops and meetings with the productive

sector, including the First Meeting on "Valorisation of Agricultural and Industrial Waste and Circular Economy," were organised. Foreign professors were included as visiting professors and co-advisors, and cotutelle and double graduation agreements with international universities were managed. Dissemination workshops and innovation workshops for doctoral students, led by the Technology Transfer Directorate, were also conducted. Additionally, elective course offerings were expanded to include subjects such as "Food Process Engineering I" and "Multi-scale Molecular Modelling."

Experts' evaluation

The experts confirm that the programme demonstrates a strong commitment to academic excellence and continuous improvement, reflected in its successful efforts to update learning outcomes and align with current developments in academic and scientific fields. Foreign professors are invited as visiting lecturers, and the qualifications and research activities of all teaching staff are thoroughly documented. While these efforts are commendable, the panel of experts also underlines the necessity to further develop the alignment with developments in the relevant field and labor market, including opportunities in business and non-academic sectors (**Finding 3**).

The facilities and resources available to the programme are appropriate and well-suited to support its academic and research objectives. They enable candidates to work in a well-designed environment to achieve the required outcomes. Establishing synergies with other doctoral programmes could further enhance collaboration and resource sharing.

Students are also provided with information on scholarships and tuition fee waivers, as well as guidance on professional development opportunities, such as industry internships that contribute to the skill development of the PhD candidates. In line with industry developments and to further enhance the curriculum, modules focusing on spin-offs and soft skills development should be included, alongside a greater emphasis on competencies such as respect for socio-economic, cultural, ethnic, gender, nationality, and religious diversity. Modern doctoral education extends beyond academic research, preparing students for diverse career paths. Modules on spin-offs equip students with entrepreneurial skills to translate research into marketable solutions, fostering innovation and economic impact. Similarly, soft skills—such as communication, teamwork, and leadership—are essential for career success in both academic and non-academic settings. (see **Finding 2**),

Currently, the programme is taught in Spanish, and in line with this programme design, non-Spanish speaking students are required to certify their proficiency in the language. However, recognizing that English is the lingua franca of academic research and international collaboration, a defined level of proficiency in English would PhD students to publish in high-impact journals, participate in global academic networks, and present at international conferences, all of which are critical for enhancing their academic and professional visibility. As discussed above, for Chilean programmes, incorporating English as a mandatory element aligns with global academic practices and makes graduates competitive in the international job market. (see **Finding 1**). The panel of experts also recognizes positively that the admission requirements and procedures are clearly described and accessible, while they are also considered very demanding, requiring prior research experience demonstrated through participation in projects as research assistants or thesis students. On the long run, further developing these requirements to balance inclusivity with academic rigor would help widen access to the programme.

Concluding, the panel of experts undoubtedly confirms the achievement of the PhD Level of the European Qualifications frameworks and encourages the University to develop a clear expectation towards an defined level of English proficiency for its PhD holders

Conclusion

The criterion is partially fulfilled.

1.3 Agri-Food and the Environmental Sciences (PhD)

Description

Graduation profile

According to the SER, the graduate profile for the PhD programme “Agri-Food and the Environmental Sciences” highlights their proficiency in several areas such as, managing and innovating production processes, designing and implementing research programmes, and creating sustainable agri-food systems.

It is stated that the programme aims to prepare graduates for diverse career paths in research, productive development, and technological innovation. Graduates can pursue opportunities in academic institutions, research centres, public services, the private sector, or even start their own ventures. The comprehensive training provided equips Doctoral graduates to contribute to the growth of universities, businesses, and specialized consulting firms, thereby fostering job creation and technological innovation, especially in economically and socially significant areas relevant to the programme's focus. Given the region's strategic role in agriculture adaptation amidst ongoing climate changes, the programme aligns perfectly with current and future regional needs. Moreover, the Doctorate aims to enhance the University's social role by cultivating competent advanced human capital that contributes to scientific, technological, economic, and social development in line with institutional objectives. This social relevance extends to the personal development and growth of graduates, offering them enhanced job prospects and empowering them to make meaningful contributions to their families and communities.

Intended learning outcomes on the programme level

It is stated that graduates possess a comprehensive understanding of environmental sciences and agri-food systems, as well as proficiency in productive processes, biotechnological applications, technological innovation, design and optimization of agri-food value chains, leadership, entrepreneurship, and environmental conservation. They are equipped to:

- Conduct basic and applied research in agri-food production to meet industry and public sector needs.
- Create and evaluate sustainable agri-food processes.
- Develop technological innovation in agri-food production.
- Diagnose and design solutions that balance agri-food production with environmental conservation and preservation.

Furthermore, they demonstrate the ability to collaborate within teams, communicate effectively with diverse stakeholders, generate, apply, and create new knowledge while adhering to ethical principles. With their holistic training, graduates are well-suited for roles in public or private services and institutions, universities, and research centres. They can contribute to scientific development, technological adaptation, optimization of production processes, and formulation of environmentally and socially sustainable public policies.

Curriculum

Following the SER, the curriculum is structured to match PhD students in accordance with the graduate profile. The curriculum consists of three cycles (Basic cycle, Specialised cycle, and the Graduation Activities Cycle).

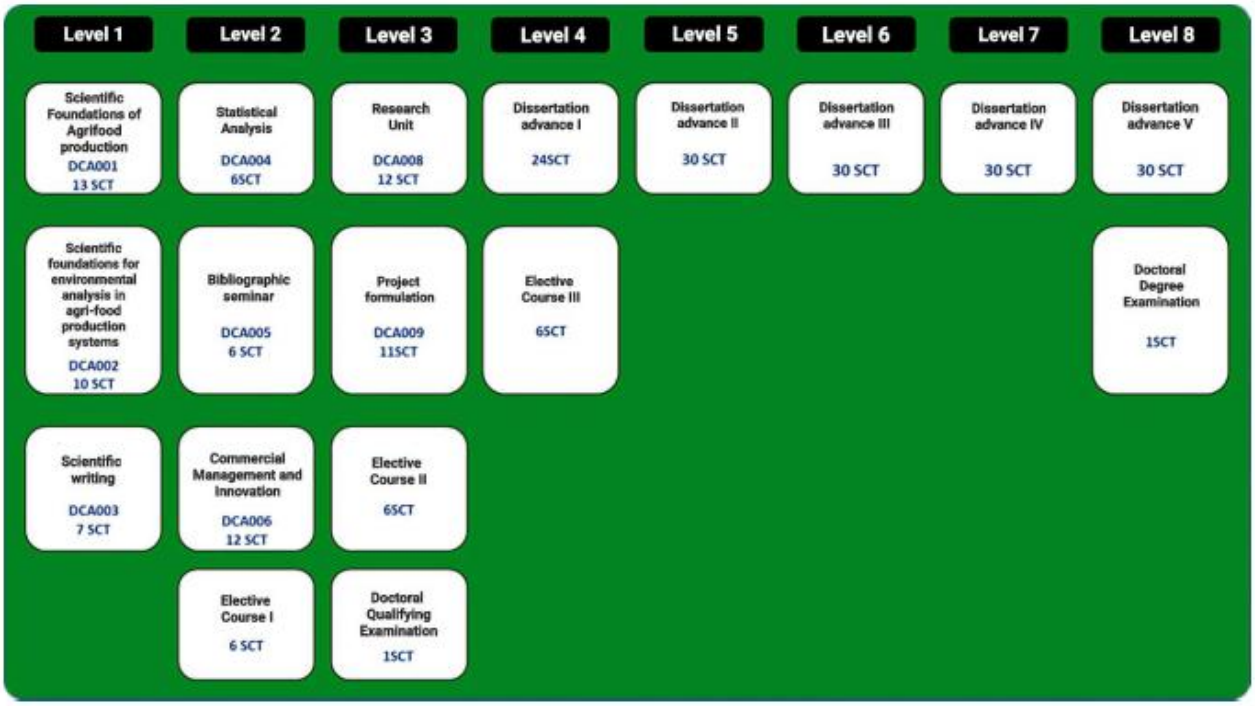
In the Basic Cycle, courses such as "Scientific Foundations of Agrifood Production" and "Scientific Foundations for Environmental Analysis in Agri-food Production Systems" cultivate competencies in identifying and

diagnosing scientific and technological challenges within the agri-food chain, while also emphasising the importance of balancing production with environmental preservation. Additionally, "Scientific Writing" refines students' communication skills for effective dissemination of research findings.

The Specialised Cycle offers courses like "Statistical Analysis" and "Commercial Management and Innovation," fostering competencies required for spearheading research and technological advancements in the agri-food and environmental sectors. Elective specialization courses afford students the opportunity to customise their educational journey.

Throughout the Graduation Activities Cycle, from thesis project formulation to the degree exam, the curriculum remains aligned with the overarching objective of nurturing basic and applied research for agri-food production and environmental sustainability.

An overview of the curriculum looks as follows:



Experts' evaluation

The PhD programme in Agri-Food and the Environmental Sciences, despite the challenges posed by the Covid pandemic, has shown resilience and continues to benefit from all the opportunities and services UFRO provides to its students. These include funding opportunities, fellowships for international mobility, and well-equipped facilities, laboratories, and farms. All these opportunities are on a sound basis for the growth of this young PhD programme that started in 2017. It is worth noting that the implementation of this PhD programme suffered from the Covid pandemic that caused the dropping out of some of their PhD students.

Overall, the topics covered by this PhD programme are timely and could contribute to training new scientists who could play a key role in shaping Chile's future. The learning outcomes of this PhD programme are clear and well-designed, creating a sound curriculum for earning the PhD title. The PhD programme includes subject-specific elements, and the interdisciplinarity in the PhD programme is good.

Given the impact of climate change on the agri-food sector and the environment, the PhD programme offers courses that reflect the updated requirements of the academy and the labour market. The PhD programme has enacted several initiatives to monitor the impact on society and the market, underscoring its commitment to responsible academic and professional practices. At the same time, the PhD programme expects surveys from students to assess the appropriateness of the courses provided.

The PhD programme includes doctorate-level courses, and the credits needed to earn the PhD title are established according to the European Qualifications Framework. The progress of PhD students is monitored every six months, which is a good way to assist PhD students and give useful suggestions for organizing learning and research activities better. Students earn the title through a final defence before a committee that includes an international expert.

In its short life, the programme's curriculum has already been modified, e.g., by including additional teaching. From the experts point of view, these changes, which have been well documented, have significantly enhanced the quality of the programme. The inclusion of teaching activities focused on plant production, for instance, has not only broadened the scope of the curriculum but also contributed to its overall quality.

The programme workload is transparently allocated, and most of the teaching is offered in the first and second years. This choice is mainly related to the possibility of enrolling bachelor students in the PhD programme. Offering most of the courses at the beginning could compensate for possible discrepancies in the backgrounds of bachelor and master students, demonstrating the programme's adaptability. The last two years are fully dedicated to the research activities. From the expert's point of view, this is well designed and implemented.

The programme is characterized by a strong willingness to increase its own quality to make it comparable to international and European standards. To achieve this aim, the programme is yet lacking a sound and clear expectation of English proficiency to enable its graduates an internationally competitive participation in a global PhD community. Hence more efforts must be enacted to make English proficiency at a yet to be defined level mandatory in the PhD programme in Agri-food and Environmental sciences (see **Finding 1**). Official documents shall be drafted in English and Chilean, and also some courses should be taught in English. To be admitted to the programme, candidates should provide evidence to have at least a B1 level in English. Also, professors participating on the board of this programme should to a growing number have at least a B2 level in English. Inviting international experts from other universities in countries where Spanish is not the national language is recommended. Increasing the English proficiency of PhD students and their supervisors will have an impact on establishing future collaborations and expanding the impact of their work.

Proficiency in English also plays a role in the entrepreneurial skills of future scientists. English will be needed to communicate results to stakeholders outside Chile, allowing translation of the achievements of the PhD projects into products. The agri-food sector is looking for new solutions, and stakeholders are interested in what academics produce in their laboratories. Thus, the programme should promote soft skills and spin-off development modules (see **Finding 2**). Working on these aspects will surely increase the quality and attractiveness of this PhD programme.

Conclusion

The criterion is partially fulfilled.

1.4 Natural Resources Sciences (PhD)

Description

Graduation profile

According to the SER, the graduation profile for the PhD programme “Natural Resources Sciences” outlines a researcher with training in natural resource sciences within the framework of environmental sustainability. Graduates will be equipped with skills to advance science, technology, and innovation focused on conserving natural resources and disseminate knowledge to both the scientific community and society at large. Their multidisciplinary training covers physical, chemical, biological, and microbiological processes related to natural resources, including their interconnections with plant production, conservation, prevention, and soil bioremediation. Alongside specific competencies, students develop generic skills such as conducting original research, managing the publication of scientific articles, disseminating findings to diverse audiences, and devising strategies for intellectual property transfer and protection. With their academic background, Doctor in Natural Resources Sciences demonstrate the ability to collaborate in multidisciplinary teams, apply critical thinking, and uphold ethics and social responsibility in their professional endeavours. It is stated that they are adept at initiating and maintaining research lines, and seamlessly integrate into research centres or nuclei within universities, the private or public sectors, both nationally and internationally.

Intended learning outcomes on the programme level

As outlined in the SER, the PhD programme is an academic programme designed to cultivate high-level researchers capable of addressing issues pertinent to regional and national development. The programme aims to achieve the following specific objectives:

- Provide doctoral candidates with a modern, multidisciplinary perspective in natural resources, particularly focusing on biotechnology. They should be equipped to spearhead research in sustainable agri-food production and natural resource sciences, benefiting both the region and the nation.
- Enhance international visibility by fostering collaborative networks with foreign centres of excellence through international cooperation programmes with universities and specialized research centres. These collaborations will emphasize biotechnological aspects relevant to the programme's research lines.
- Strengthen the scientific and technological capacity of research lines supporting the Doctorate in Natural Resources Sciences, with a particular focus on biotechnological aspects of agri-food production. This will have a positive impact on the regional and national productive sector.
- Contribute to the scientific and technological development of natural resources in the La Araucanía Region by transferring the results generated by various research groups supporting this programme.

Curriculum

The documentation shows that the PhD programme’s curricular structure encompasses a total of 242 SCT that PhD students must fulfil. In the initial three semesters, students undertake compulsory Courses of General Formation (24 SCT), Bibliographic Seminar I (4 SCT), Bibliographic Seminar II (3 SCT), Research Unit (17 SCT), and Speciality Topics (12 SCT). These courses are meticulously designed to furnish students with a comprehensive understanding of environmental sciences and specific subjects.

Moving forward, in the third semester, students are required to pass a Qualification Exam for the Doctoral Thesis project (29 SCT). Subsequently, they must prepare and submit four thesis progress reports (advances)

(120 SCT) to the Doctoral Thesis commission. Upon approval of these progress reports, students undergo a private Examination (Doctoral Dissertation) (30 SCT) followed by a public Doctoral Degree Examination (3 SCT).

According to the SER, the PhD programme features foundational training in subjects like Analytical-Instrumental, Biostatistics, Project Formulation, and Intermediate English, which students must demonstrate proficiency in or undertake as mandatory courses. These foundational subjects serve as accreditation prerequisites and do not carry credits. Moreover, students must pass an English language proficiency test.

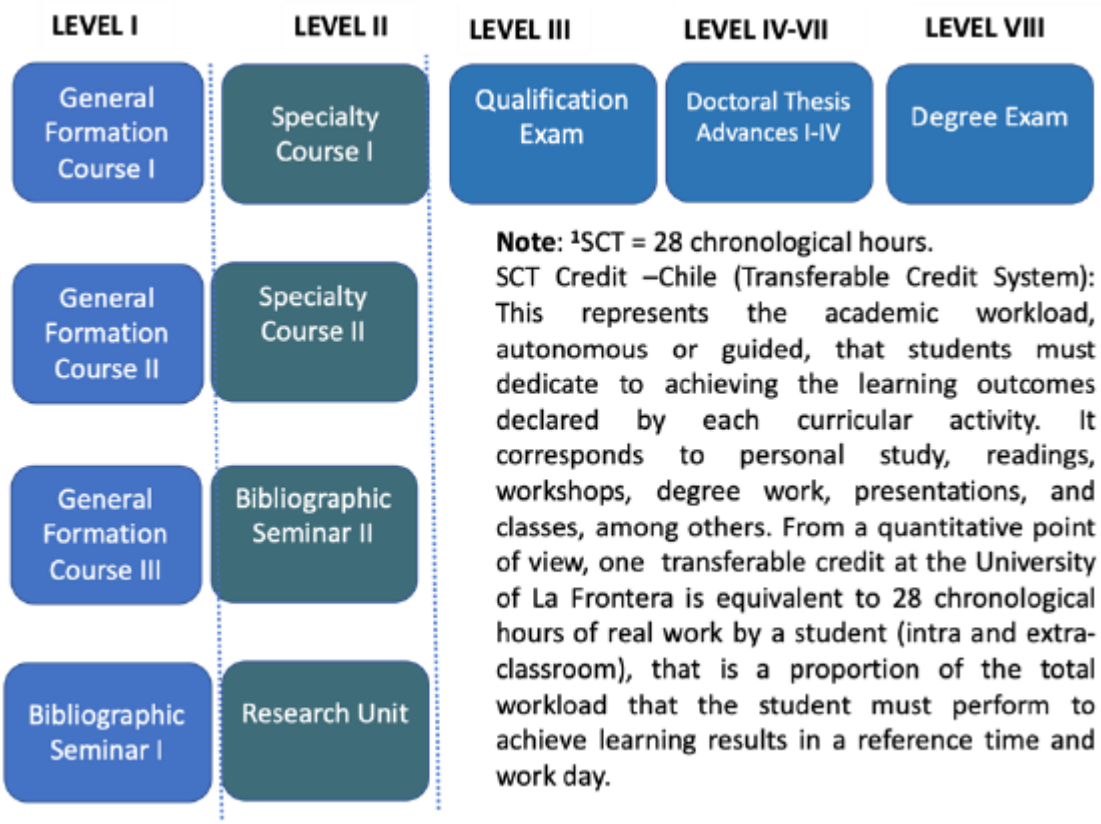
During the initial semester, students engage in mandatory general training courses such as Integrated Management of Natural Resources, Biogeochemical Cycles, and Evolutionary Fundamentals for Biodiversity Management, along with a Bibliographic Seminar exclusive to the program.

In the subsequent semester, students choose two specialty electives. They participate in Bibliographic Seminar II and the Research Unit, providing hands-on research experiences within a research group. While these courses are primarily for programme students, students from other programmes can also enroll in them.

The third semester is dedicated to preparing for the Qualifying Exam, overseen by a Commission comprising external and internal professors, the supervisor, and co-supervisor. The exam involves presenting the doctoral thesis project and a bibliographic review, evaluated separately.

Following successful completion of the Qualifying Exam, students submit four progress reports on their doctoral work, each presented in English and followed by oral presentations. They then defend their doctoral thesis, including two scientific articles—one published and the other submitted to a reputable journal.

An overview on the curriculum looks as follows:



The Programme encompasses four Areas of development supporting various research lines, which are:

(1) Area of **Soil and Environment Sustainability**, backed by research lines such as applied microbial ecology, physicochemistry of soil and environment, geomicrobiology and redox biology, among others.

(2) Area of **Plant Nutrition and Physiology, and Agri-Food Safety**, with research lines including soil-plant interaction, biochemical and molecular effects on abiotic stress in plants, phytopathology, and biocontrol, among others.

(3) Area of **Environmental Biotechnology, Ecological Chemistry, and Bioproducts**, featuring research lines like environmental biotechnology and waste recovery, medicinal chemistry, and molecular pharmacology, among others.

(4) Area of **Water Resources, Environmental Ecology, and Valorisation of Agro-industrial Waste**, with research lines including water resources and hydrological modelling, aquaculture, circular economy, and valorisation of agro-industrial waste, among others.

Experts' evaluation

According to the expert panel, the PhD programme provides sufficient elements necessary to provide academic excellence of the doctoral candidates and to foster them with subject-specific and interdisciplinary elements that allow them to understand and scientifically approach relevant and urgent challenges for providing sustainable solutions to regional and international problems. It can be confirmed that the programme achieves the PhD level of the European Qualifications Framework. The main elements are presently concentrated on subjects related to soil science, and some additional efforts (i.e., additional teaching capacity) to expand to other areas of Natural Resource Sciences are desirable. This provides students with a higher flexibility to specialise in areas that align with their research interests and expands their career options. Although synergies with other doctoral programmes are promoted by offering joint courses and sharing resources, the programme should provide a broader range of elective subjects (such as "advanced topics in renewable energy", "biodiversity conservation", or "environmental policy") to allow for greater academic and professional specialisation (**Finding 4**). This flexibility also attracts a more diverse student population, including international candidates, enhancing the programme's appeal and reputation.

The programme was recognized as ambiguous and competitive on an international level. In terms of work-life balance and to achieve a sustainable workload for students, it is recommended to continue to review the need to introduce level 1 courses or modules as essential elements of the curriculum. While didactically helpful for some, they might not be required for all.

To assure international competitiveness and to increase internationalization, incorporating English language skills as a mandatory element will also be essential for this PhD programme. (see **Finding 1**). The panel acknowledges and supports the existing efficient measures such as the requirement of a basic English level of the students, the support of students attending international conferences and their participation in international academic exchange programmes. However, opening the programme to non-Spanish speaking students by providing courses or even programmes in English would give access to a broader international audience leading to an increased institutional visibility and at the same time meet the accreditation expectations for global integration.

The panel recognized a well-designed programme for the preparation of well-trained young academia. However, modern doctoral education extends beyond academic research, preparing students for diverse career paths, including entrepreneurship and governmental activities. This could be achieved by offering modules on

spin-offs that equip students with the respective skills to translate research into marketable solutions, fostering innovation and economic impact (see **Finding 2**). Although already partially included in the programme, elements of soft skills training – such as communication, teamwork, and leadership – need to be integrated for professional success in both academic and non-academic settings. These components align with international accreditation expectations for a holistic graduate education.

Conclusion

The criterion is partially fulfilled.

2. Procedures for quality assurance

Doctoral degree

The programme is subject to the higher education institution's policy and associated procedures for quality assurance, including procedures for the design, approval, monitoring, and revision of the programmes.

A quality-oriented culture, focusing on continuous quality enhancement, is in place. This includes regular feedback mechanisms involving both internal and external stakeholders.

The strategy, policies, and procedures have a formal status and are made available in published form to all those concerned. They also include roles for students and other stakeholders.

Data is collected from relevant sources and stakeholders, analysed, and used for the effective management and continuous enhancement of the programme.

[ESG 1.1, 1.7 & 1.9]

Description

Quality assurance policies

According to the self-evaluation report (SER), Universidad de La Frontera has established a postgraduate policy grounded in strategic guidelines and defined principles, including recognized quality, interdisciplinarity, continuous innovation, cooperation, ongoing evaluation, relevance, flexibility, sustainability, and impact. The SER emphasizes that this policy aligns with the National Quality Assurance Public Policy and those are annexed to the SER.

Within this framework, the University states that it has implemented a quality assurance system focusing on improving formative processes and employing tools for planning, implementation, evaluation, and feedback. The SER highlights the use of the SEPLAD tool, a planning and control system dedicated to monitoring Development Plans. This tool, accessible through the Intranet, enables the Quality Management Department to monitor online the Development Plan and the annual action plan of programmes, as well as to compile evidence of progress on commitments. This procedure is documented in the SGIC-UFRO (Comprehensive Quality Management System) and described on the website.

Moreover, the Postgraduate Academic Directorate actively promotes continuous innovation in postgraduate profiles and study plans, conducting internal review processes. The SER underscores that this approach involves a participatory, consultative, and validating framework for modifications. Units responsible for Curricular Design and Management, along with the Quality Management unit, consistently support programmes following the relevant guidelines. To keep curricular content up-to-date according to external demands, a biennial monitoring process is conducted through instruments collecting feedback from graduates. This process, initiated in 2016, provides information about employment outcomes and the relevance of curricular activities and courses in academic or professional performance.

Furthermore, postgraduate programmes and specialties undergo continuous improvement through the monitoring of recommendations from external evaluations and the commitments outlined in their improvement plans. The SER emphasizes that the use of the SEPLAD tool, along with annual evaluations and action plan development, helps maintain evidence of objective achievement or the necessary redefinition of strategies and actions to effectively reach and sustain their objectives.

Lastly, the institution is committed to safeguarding students' rights through the implementation of the Gender Quality and Inclusion Policy and the University Coexistence Regulation (both annexed to the documentation). These measures ensure protection against intolerance and discrimination, guaranteeing rights such as comprehensive and quality training, non-arbitrary discrimination, freedom of expression, student mobilization, the right to information, the right to petition, and the right to complain.

The annexes include student and graduates' data, improvement plans, and student's and graduates' surveys for all four programmes.

The SER outlines specific internal stakeholders who are responsible for quality improvement aspects, namely the programme directors, the sub-directors, the academic committees, the programme secretariats, academic coordinators, the programme faculty members, the continuous improvement team, the self-assessment committee, and students and graduates.

It is explained that the Programme Director is responsible for overseeing self-regulation processes, curricular adjustments, and the monitoring and evaluation of the Improvement Plan. They are supported by the Subdirector, academic committee, and Programme Secretariat. Their duties encompass directing programme activities, ensuring objectives are achieved, maintaining academic quality, proposing academic staff, supervising student activities, and participating in quality assurance processes.

The Sub-Director leads the Continuous Improvement Team, tasked with fulfilling the annual quality assurance action plan, which integrates recommendations from accrediting institutions and the self-assessment process.

The Academic Committee, composed of academics and a student representative, ensures programme academic standards. They advise the Director on management matters, approve appointments, validate courses, and devise annual action plans.

Furthermore the SER explains that students and alumni offer feedback on curricular and operational processes through various channels, including service meetings and teaching evaluations.

Information management

According to the self-evaluation report (SER), Universidad de La Frontera employs various platforms to provide stakeholders with permanent, systematic, and updated information, contributing to decision-making for the continuous improvement of postgraduate programmes and specialties. These platforms, detailed in the SER, include:

1.) Intranet: A management platform facilitating academic and administrative actions related to postgraduate programmes, such as subject enrolment, teacher performance evaluation, academic accreditation, and grade report management. 2.) Monitoring of Development Plans (SEPLAD): This platform is instrumental for tracking commitments and planning within the continuous improvement framework, offering systematic monitoring of Development Plans. 3.) System for Managing Courses and Programmes (ASIGNA): ASIGNA serves as a platform facilitating the entry and monitoring of all academic activities of students within postgraduate programmes.4.) Academic Planning (PLANAC): PLANAC is utilized for entering and monitoring the planning of curricular activities and courses within the programmes and specialties. 5.)Biennial monitoring of occupational employment and curricular feedback: Surveys directed at graduates collect information about employment trends and knowledge demands in the labor market.6.) Management Report: The Postgraduate Academic

Directorate systematically generates an annual summary report of key internal efficiency indicators for post-graduate programmes and specialties, supporting decision-making for continuous improvement.

The Vice-Rectory of Undergraduate Studies manages student progression and success rate information on the ASIGNA platform. Learning resources in the teaching domain are designed to enhance teaching-learning methodologies, and various programmes and resources for teaching improvement are offered by the Vice-Rectory of Undergraduate Studies, including induction programmes, an inverted teaching diploma, deepening workshops, micro-courses, and internal monitoring of key performance indicators, employment outcomes for graduates, and the number of publications resulting from theses.

Experts' evaluation

In line with the institutional plans and processes outlined, the expert group concluded that UFRO provides a cohesive framework underscoring quality and consistency in the programmes' delivery, evaluation, and student support. It is evident that academic councils monitor content and quality in alignment with institutional frameworks for transparency and quality assurance.

Quality assurance instruments relevant to the doctoral programmes include tools, concepts, and well-developed frameworks which are in place and in use. These include well-developed structures facilitating feedback and assessment as well as means for regular external reviews. They underline the institution's commendable continuous commitment to maintaining and implementing high academic standards. For example, a comprehensive overview of students' progression (e.g., student group composition, study duration, completion rate, grade distribution, failed/completed assessments) are available for each doctoral programme. Procedures are in place to safeguard academic integrity, prevent academic fraud and discriminatory actions within the programmes, and provide means to identify and address relevant findings.

The four doctoral programmes have recently been (re)accredited at the national level, so the alignment with relevant national standards is readily apparent in terms of the mechanisms for ensuring the selection of candidates, doctoral research topics, continuous assessment/review of performance and conditions/processes leading to the award of doctoral degree(s).

It has been understood by the panel of experts that regional universities have gained additional importance and visibility at national level thus reinforcing approaches that warrant a responsible and sustainable management and enhancement of the programmes overall. The group of experts was able to grasp the processes that the institution must undergo to facilitate implementation, advancement and (if relevant) change of programmes in alignment with national (regulatory) frameworks, to maintain, ensure, and improve the quality of the university's postgraduate programmes over time.

While feedback and experiences of student representatives are used for the enhancement the programmes,it remained unclear how programmes that have no direct/permanent/formal involvement from the student representatives are able to adequately align their programme development to needs and expectation of their students. The experts found that, although apparently optional across the four programmes under review, it would be beneficial if student representatives were enabled to provide input and be included as active stakeholders in relevant structures of the QA in all doctoral programmes to ensure that their input and feedback can be better integrated in the decision making process and the QA processes, across the four doctoral programmes (**Finding 5**). This practice promotes inclusivity and transparency, key components of quality assurance recognised by international standards. Alongside a stronger central framework, this fosters a governance structure that is responsive, democratic, and aligned with international academic norms. It is therefore recommended that the postgraduate school continues to implement a robust framework to ensure/support

harmon*iz*ation/uniformity of structure and increase the transparency of QA tools used and the communication of their impact across the four doctoral programmes (**Finding 6**).

The University's policy and associated procedures for quality assurance regarding the evaluation of progression and completion rates has been widely discussed. From discussions with the faculty and students, the experts have gained a better understanding on the impact of the last pandemic on teaching and learning, and graduation rates at UFRO. Based on these discussions the panel clearly encourages to increase internal awareness about the potentially high student workload and resulting risks of potential burnout cases. Consequently, further awareness and a systematic analysis of student workloads is needed to ensure balance and prevent burnout of doctoral candidates (**Finding 7**). The review of and assessment of student workload ensures that academic demands remain rigorous yet manageable. Overburdened students may experience burnout, which can hinder their research output and overall achievements. Regular monitoring of workloads allows for adjustments that align with required/international best practices, hence fostering student retention, well-being and providing further safeguards against student attrition.

Feedback from internal and external stakeholders is essential to the programmes. It has become evident that various stakeholders, including (some/selected) labour market representatives are involved in the quality assurance procedures across the doctoral programmes. The expert panel and representatives of the labour market, students and graduates discussed access to the labour market and covered needs and expectations relevant to the doctoral programmes and their outcomes. Some aspects that have national relevance as well as context of needs which are seen as labour-market relevant became evident during the site visit. The experts recommend that activities and existing feedback loops could be further strengthened to increase diversity of labour-market representatives (from more sectors) invited to participate in the Q&A processes, in alignment with the national key priorities and responding to/reflecting the specific development plans of the region. The university is already working to increase innovation-focused training and research partnerships; ensuring their graduates are equipped to meet wider sectoral (industry) needs. Efforts to significantly advance/enhance collaboration with industry should be further strengthened (**Finding 8**). Increased collaboration with the private sector including industry ensures not only that research strengths at UFRO remain relevant to societal and economic needs but that it represents a key factor in gaining and maintaining international accreditation. Such efforts could for example include joint research initiatives with pharmaceutical or biotechnology companies to develop applied solutions in medicine or agriculture (for Ciencias mención Biología Celular y Molecular Aplicada), partnerships with agribusinesses to address challenges in food security and environmental sustainability (for Ciencias Agroalimentarias y Medioambiente), collaborative projects with bioprocessing companies, including internships and co-supervised doctoral research projects (for Ciencias de la Ingeniería Mención Bioprocesos), and involvement with industries focused on sustainable resource management, such as renewable energy firms or forestry companies (for Ciencias de Recursos Naturales) to enhance student employability but also provide further platforms to attract funding and provide avenues for real-world applications of academic research.

The panel of experts positively recognizes that changes and adjustments implemented in the QA system (so far) as well as advancements deriving from previous evaluations are evident and well documented. Overall, the procedures for quality assurance and the QA system in place at the university can be commended/positively evaluated.

Conclusion

The criterion is fulfilled.

3. Learning and assessment of students

Doctoral degree

The form of supervision and/or course structure is adequate and corresponds with the intended learning outcomes.

Students are assessed using accessible criteria, regulations, and procedures, which are made readily available to all participants and which are applied consistently.

Assessment procedures are designed to measure the achievement of the intended learning outcomes.

[ESG 1.3]

Description

3.1 Learning

As outlined in the SER, teaching methodologies are formulated to fulfil objectives and the graduation profile, as outlined in the course programmes accessible on the virtual campus and the intranet. These methodologies are overseen by professors from the academic staff. They encompass expository sessions covering the theoretical aspects of each unit, practical exercises, assessments through tests or quizzes, and seminar assignments involving both written reports and oral presentations. It is stated that the predominant methodological tools employed in the mandatory and elective courses prioritize facilitating access to knowledge and fostering active student participation in the acquisition of knowledge.

3.2 Assessment

According to the self-evaluation report (SER), Universidad de La Frontera has established regulations to address compensations for disadvantages, illness, or absence, particularly outlined in the General Doctorate Regulations. These regulations include institutional provisions to prevent dropout situations by facilitating postponement or temporary withdrawal from studies and/or medical leave due to health-related circumstances.

In 2022, the university formalized its Equality and Gender Equity Policy, aligning with current legal regulations in Chile. As part of this policy, the university commits to integrating the principles of equality and gender equity into the practices and institutional structures governing university life. This includes incorporating co-responsibility and reconciliation of personal, family, work, student, and academic life without compromising fundamental rights. The application of gender criteria to academic and work conditions, promotion of balanced gender representation, development of an intercultural gender perspective, and prevention and eradication of gender-based violence and discrimination are integral aspects of the policy. Furthermore, training activities on gender issues and the consequences of gender-biased behaviours are conducted for the university community.

Regarding the grading scale, the General Doctorate Regulations stipulate that doctorate students at Universidad de La Frontera will receive grades for their curricular activities/courses on a scale ranging from one point zero (1.0) to seven point zero (7.0), with the minimum passing grade set at five point zero (5.0), following the annex submitted to the SER.

Furthermore, the SER specifies the following items within the PhD sequence:

Doctoral Qualifying Exam

The SER outlines that before embarking on their PhD thesis, students are required to undergo a Qualifying Examination to ensure they possess comprehensive knowledge in their field, can adeptly handle its core concepts, and can independently propose solutions to new challenges. This exam includes a presentation and defense of the PhD thesis project. The Qualifying Examination Committee, proposed by the Dissertation Advisor and comprising at least four academics, evaluates the project. The Programme's Academic Committee

reviews and confirms the committee's assessment, ensuring impartiality by addressing conflicts of interest. If successful, the student progresses to doctoral candidacy; failure grants one chance for re-examination within three months. The Committee may approve, modify, or reject the thesis project, with modifications incorporated by the Dissertation Advisor. Rejection allows one opportunity to present a new project within three months. Approved projects are registered, and the Dissertation Advance mode is determined by the Academic Committee. It is stated that the thesis progress is evaluated and recorded accordingly.

Doctoral Dissertation

The Dissertation can be undertaken in any authorized laboratory designated by the Programme's Academic Committee. For dual degree theses, each institution must provide a Dissertation advisor, with the student spending a minimum of six months at the foreign university, as per the agreement. The Degree Thesis, a vital curricular activity, aligns with the Programme's graduation profile competencies. It entails original research, assessing the student's ability to methodically address research project challenges, overseen by a Guide Professor. The Dissertation advisor may not oversee more than five theses concurrently unless involving distinct Programme areas. Advisor changes may occur under exceptional circumstances, with mutual consent and Academic Committee authorization.

The Programme's Directorate, alongside Dissertation Advisors, ensures students have necessary resources and conducive working environments for thesis progress. The Dissertation Evaluation Committee comprises the Qualifying Examination Committee members; otherwise, a new Committee is appointed. Chaired by the Programme Director or designee, the Committee ensures impartial evaluation. Candidates submit their thesis for evaluation, receiving a report within four weeks. Approval may be granted, with modifications necessitating incorporation within a month. The revised thesis undergoes re-evaluation. Approved theses, with a summary, are forwarded for Degree Examination Minutes issuance, managed by the Academic Directorate of Postgraduate Studies. All publications must acknowledge Programme affiliation, alongside other relevant institutions.

Doctoral Degree Examination and obtaining the degree

Candidates pursuing a PhD degree must undergo a Doctoral Degree Examination following approval of their thesis by the Dissertation Evaluation Committee. This examination involves a public presentation and defense of the thesis, typically conducted in person, although remote examinations may be authorized by the Programme Directorate. The examination date is mutually agreed upon by the candidate, Dissertation advisor, and Programme Director, taking into account the Academic Calendar. The Degree Examination Committee, comprising members of the Thesis Evaluation Committee, is appointed to oversee the process. If necessary, a new Committee is nominated. The Committee, chaired by the Programme Director or their designee, ensures impartiality. In cases involving confidential information, defense publicity may be restricted as per the Academic Directorate of Postgraduate Studies' resolution.

The final Degree grade is determined by a weighted average of course grades, thesis evaluation, and degree examination performance. The weighting is divided as follows: 40% for curricular activities, 50% for Thesis Progress and Doctoral Thesis, and 10% for the Degree Examination grade. Grading equivalencies range from "Approved" to "Approved with Maximum Distinction".

Graduation requirements include presenting an accepted publication and a submitted publication as the first or corresponding author, both indexed in WoS journals. Affiliation to the Doctoral Programme must be acknowledged in the articles. A patent application related to the thesis topic with the candidate among the first three co-inventors is considered equivalent to a submitted publication. The Programme Directorate handles student appeals, while any unresolved matters are referred to the Academic Directorate of Postgraduate Studies.

Regarding regulations for compensating disadvantages, illness, or absence, the Universidad de La Frontera allows temporary withdrawal or postponement of studies, regulated under Law 21369. Grading follows a scale

from 1.0 to 7.0, with a minimum passing grade of 5.0. Thesis evaluation committees comprise at least four academics, including both programme staff and external evaluators meeting institutional accreditation criteria. Committee members are provided with evaluation rubrics and informed of the evaluation procedure before each examination.

Experts' evaluation

The programmes demonstrate a commitment to student-centred learning through a combination of theoretical and practical teaching methods. From the first semester, students engage in laboratory work alongside theoretical coursework, developing essential technical skills under supervision. This approach aligns with the intended learning outcomes by fostering both knowledge acquisition and practical research competencies. However, student feedback indicates a slight imbalance in the current curriculum structure, with many advocating for fewer mandatory courses and more research-focused activities. This suggests an opportunity to enhance the student-centred approach by allowing greater flexibility in learning paths and increased emphasis on independent research. Also, the panel believes that a stringer student involvement in the continuous programme development would help the university to identify these potentials itself **(see Finding 8)**.

The diversity of students' needs is partially addressed through institutional provisions for study postponement and temporary withdrawal. The university's 2022 Equality and Gender Equity Policy represents a positive step toward recognizing diverse student circumstances, particularly regarding gender equity and work-life balance. Beyond these commendable achievements in the future development the assessment could benefit from more explicit consideration of learning style diversity and academic background variations.

The experts are very satisfied to see that supervision arrangements are structured to foster academic progress through the Dissertation Advisor system. The limitation on concurrent thesis supervision (maximum five) helps ensure adequate attention to each student's research. The provision for dual-degree theses with international co-supervision demonstrates commitment to global research standards.

While the basic framework of assessment is sound, the assessment of students would benefit from clearer articulation of regular progress review mechanisms beyond the Qualifying Examination. As discussed during the interviews more frequent and formalized check-ins and milestone assessments could enhance student progression and timely also increase student retention and completion rates.

It finds the experts support how the programmes show emerging efforts to support knowledge transfer beyond academia through webinars with the productive sector and the establishment of a Technology Transfer Office. However, graduates and current students indicate that practical connections with industry remain underdeveloped. To strengthen this area, the curriculum could incorporate more structured opportunities for applying theoretical knowledge in non-academic settings. Industry internships applied research projects, and professional skills workshops would enhance students' ability to transfer their expertise to diverse contexts. As mentioned above, and increased exchange and interaction with the industry should be a priority in the closer future of programme enhancement **(see Finding 8)**.

The assessment regulations are clearly defined within the General Doctorate Regulations, with transparent grading criteria (scale of 1.0 to 7.0, with 5.0 as the minimum passing grade). The Qualifying Examination process is comprehensively outlined, including committee formation, evaluation criteria, and remediation procedures. Information regarding examination requirements is accessible to students, though the evaluation does not specify exactly when and how students are informed about exam timing. While a more explicit communication protocol would enhance transparency and student preparedness the panel found that in practice this is not an area of concern as the relevant actors are appropriately informed.

The doctoral examination procedures are communicated with reasonable transparency, particularly regarding the Qualifying Examination and Dissertation processes. The documentation outlines the structure for thesis

project presentation and defence, committee composition, and candidacy progression. Progressively thinking and increasing transparency for external stakeholders, the assessment description would benefit from more detailed information on e.g., options for monograph versus cumulative dissertation approaches, clear timelines for thesis completion and defence, status requirements for publications prior to dissertation defence, recognition protocols for individual achievements within collaborative research. These specifications would enhance procedural clarity and help students better navigate the doctoral journey.

From the expert's point of view, the range of examination formats is appropriate for assessing different learning outcomes, encompassing both theoretical knowledge and research capabilities. The Qualifying Examination effectively evaluates comprehensive field knowledge and independent problem-solving abilities, while the Dissertation assessment focuses on original research contribution and methodological rigor.

The programmes have established remediation procedures for unsuccessful examination attempts. Students who fail the Qualifying Examination have one opportunity for re-examination within three months. Similarly, rejected thesis projects can be revised and resubmitted once within the same timeframe. While these basic appeals mechanisms exist, the provided documentation does not specify a comprehensive appeals procedure for disputing grades or examination results. A more structured, defined and published appeals process will be required **(Finding 9)**. It should include independent review mechanisms, would enhance procedural fairness and student confidence in the assessment system. This could be achieved through formalising progress monitoring (with regular, structured progress reviews beyond the Qualifying Examination to support timely completion), diversifying assessment methods (approaches that evaluate both theoretical knowledge and practical application skills), strengthening appeals procedures (developing and communicating a comprehensive appeals process for examination disputes), enhancing external examiner orientation (creating a formal protocol for familiarizing external committee members with examination standards and procedures), clarifying publication requirements (specifying expectations regarding publications before dissertation defence), and expanding remediation options (considering more flexible remediation timelines based on individual circumstances and project complexity).

The assessment framework demonstrates many strengths, particularly in its clear grading criteria and well-structured Qualifying Examination process. The university's commitment to gender equity and work-life balance reflects evolving awareness of diverse student needs. However, opportunities exist to enhance the assessment system through more flexible learning paths, strengthened industry connections, clearer communication of examination specifics, and more comprehensive appeals procedures. Addressing these areas would further support student success and align the programme more closely with international best practices in doctoral education.

Conclusion

The criterion is partially fulfilled.

4. Legal status, admission and certification

Doctoral degree

The institution is entitled to award a doctorate.

Consistently applied, pre-defined, and published regulations are in place which cover student admission, progression, recognition, and certification.

[ESG 1.4]

Description

General structure of PhD programmes at UFRO

Degree awarding powers

According to the Statutes of Universidad de La Frontera, the university confers academic degrees of bachelor's, Master's, and PhD degrees. The PhD degree is awarded to a student who holds a bachelor's or Master's degree in the respective discipline and has successfully completed an advanced programme of studies and research. The PhD degree attests that the holder possesses the capacity and knowledge required to conduct original research.

Admission

To apply for admission to a PhD Programme, applicants typically need a bachelor's or master's degree in relevant fields, unless covered by an international agreement. Applicants must submit various documents online, including a justified admission request, CV, transcripts, degree certificates, proof of academic performance, two reference letters, and a certificate of no outstanding debts. All documents from foreign institutions must be legalized and translated into Spanish if necessary. A procedural manual has been prepared to guide the admission process systematically.

Programme specifics

a) Science (specialised in Applied Cellular and Molecular Biology)

Admission requirements

The entry profile for the PhD programme in Sciences with a specialization in Applied Cellular and Molecular Biology typically requires candidates to hold a degree in biology, biochemistry, biotechnology, pharmaceutical sciences, biomedical sciences, agricultural sciences, or related fields. Candidates should demonstrate motivation and competencies for research development, evidenced by scientific productivity and participation in academic-scientific activities. Proficiency in comprehending scientific articles in English is also essential. These requirements are publicly available and align with those of similar doctoral programmes nationwide.

Selection procedure

The SER outlines that the selection process consists of five stages. It begins with applicants submitting required documents to the Programme Director within specified dates. This call is advertised on various platforms including the university's web pages, the Doctorate's web pages, Scientific Societies, and social networks such as Facebook and Instagram. After the deadline, the Programme Director verifies the submitted documents to ensure they comply with the admission requirements.

Next, a pre-selection phase is conducted using a standardized guideline publicly known as the Preselection Guideline. Preselected applicants are then invited for interviews, which are conducted via Zoom or Google Meet for international candidates to accommodate geographical constraints. These interviews are held by the Programme Director, Sub-Director, and members of the Academic Committee.

In the subsequent stage, the Academic Committee evaluates applicants' credentials based on established criteria. Each applicant is scored accordingly, and those scoring above the 70% threshold are typically considered for acceptance into the Programme. The evaluation criteria include curricular background, scientific productivity, letters of recommendation (70%), personal interview (30%), and English language proficiency (10%).

Finally, the selection process concludes with the formal dispatch of individual result letters to applicants, certifying their outcomes in the Admission and Selection process for the Programme. Additionally, the results are published on the Programme's website, and the list of selected applicants is forwarded to the Academic Directorate of Postgraduate Studies at Universidad de La Frontera.

b) Engineering Sciences (specialised in Bioprocesses)

Admission requirements

Applicants must hold either a Bachelor's or Master's degree in sciences, preferably in fields compatible with the Programme such as Food Engineering, Environmental Engineering, Chemical Engineering, Biochemical Engineering, Biotechnology Engineering, Bioprocess Engineering, or similar areas. Alternatively, applicants may possess a professional degree with equivalent studies.

Moreover, candidates are expected to demonstrate a genuine interest in research and the creation of new knowledge. This interest should be supported by prior research experience, which can be evidenced through active participation in projects as a research assistant, thesis student, or report writer.

Additionally, applicants must exhibit the ability to integrate effectively into work teams and display autonomy and initiative in their work. Proficiency in English, both oral and written, at an intermediate level is also required.

These requirements, as formally established in Article 3 of the Programme Regulations, serve as fundamental criteria for admission into the Programme.

Selection procedure

The Programme Regulations specify the weighting criteria for applicant selection, as also detailed in each call for applications, distributed across Academic and professional background (40%), Personal interview performance (40%), Rationale for application (10%), and Reference letters (10%).

c) Agri-Food and Environmental Sciences

Admission requirements

Candidates applying for admission to the PhD programme should hold a Bachelor’s or Master’s degree in Sciences, with a focus on disciplines pertinent to agri-food, forestry, environmental studies, biological sciences, or other related fields.

Selection procedure

The admission process for the PhD programme encompasses several stages. Firstly, applicants are required to complete and submit the application form along with the necessary documents as specified in the call for applications.

Following this, applicants undergo an interview, which may be conducted either in person or via remote methods such as video conference. The interview involves the Programme Director and at least two members of the Academic Committee.

Subsequently, the Academic Committee evaluates the applicants and selects candidates based on their performance and qualifications. Once selected, candidates proceed to the enrolment stage, where they pay the prescribed fees and register for their curricular activities. This marks their official entry as regular students into the Doctoral Programme in Agri-Food Sciences and Environment.

d) Natural Resources Sciences

Admission requirements

Students admitted to the PhD programme are typically professionals holding a Bachelor's or Master's degree in Chemistry, Biology, Biotechnology, Biochemistry, Agricultural Engineering, Forestry Engineering, Environmental Engineering, or related fields. It is advisable for students to have a specific interest in topics concerning natural resources and the environment, along with a demonstrated motivation for studying natural resource sciences.

Selection procedure

The applicant selection process is conducted in the following manner: Applicants are required to complete the admission form and submit the necessary documents. Subsequently, the Programme's Academic Committee conducts interviews and evaluates applicants based on their academic background, personal interviews, and academic references. Following deliberation, the committee decides on the acceptance or rejection of each applicant within a 15-day period. Finally, the Programme Director communicates the decision regarding acceptance or rejection to the applicants.

Experts' evaluation

The review of the four doctoral programmes – BIOMOL, Bioprocesses, Agrifood, and Natural Resources – confirmed that they generally meet the required academic and legal standards through defined admission requirements, structured selection procedures, and regulated certification processes. While the requirements are defined and established, the panel found that key differences emerged, particularly in the accessibility of information and the evaluation criteria for prospective candidates. This will be further discussed in chapter seven.

In terms of the actual admission criteria, the experts found that BIOMOL outlines a clear, specialized entry profile defining the disciplinary scope and emphasizing research productivity and English proficiency. In contrast, Agrifood and Natural Resources primarily consider the applicant's disciplinary background. The Bioprocesses programme stands out for its particularly high expectations regarding prior research experience. Overall, the presentation of this programme does not allow a clear differentiation between necessary and required entry requirements compared to "typical competencies or preferred skills to enter the programmes". To ensure fairness, transparency and consistency, the Bioprocess programme needs to assure transparency of their admission criteria, clearly distinguishing between mandatory and recommended attributes (**Finding 10**). This is particularly relevant regarding research experience and language skills. Such alignment would uphold programme-specific academic goals while ensuring accessibility in line with UFRO's broader mission, which also seeks to serve local communities.

The selection procedures for BIOMOL, Bioprocesses, Agrifood, and Natural Resources follow a two-stage process: an initial pre-selection based on submitted credentials, followed by a final selection that includes a personal interview and a diagnostic evaluation of English language proficiency. While the selection process is rigorous and well-structured, the level of transparency again varies between programmes: BIOMOL provides the most comprehensive set of materials, including a detailed list of required documents, a pre-selection guideline with weighted criteria, an evaluation matrix for final selection, and information on available positions per open call. At the same time a clear timeline, admission success rates, and details on how interviews and English proficiency are assessed could be interesting information to be shared with externals as well. In comparison, Bioprocesses, Natural Resources, and Agrifood provide significantly less information in at least one of these critical areas. For example, Agrifood only makes its evaluation procedure and selection matrix

available via a Spanish-language as PDF. Although all programmes adhere to similar national standards, the differences in information accessibility—particularly in the weighting of criteria—make it difficult for prospective candidates to make informed comparisons. UFRO should consider standardizing how selection procedures are presented to improve transparency and comparability across all PhD programmes **(Finding 11)**.

Regarding the award of doctoral degrees, all programmes implement well-defined procedures, from thesis evaluation to the final degree examination, within a legally sound framework. PhD students are generally well-informed about key milestones such as the Examen de Calificación, thesis advancement, and Examen de Grado, yet externally available information on these processes remains limited beyond graduation profiles and curriculum outlines. Notably, joint supervision is already an option across all programmes, with some also incorporating industrial mentors, enhancing the practical relevance of doctoral research. The Natural Resources programme provides an exemplary overview of its collaborative initiatives, such as double degrees and joint supervision agreements, including clear points of contact. Again, this level of transparency is not yet comparable across all programmes and clearly the other programmes do not have to shy away from also sharing their practice. Expanding structured partnerships beyond conference participation—such as formal lab visits and extended co-supervision agreements—would further enhance research training. Implementing such initiatives may require curriculum adjustments to create dedicated mobility windows. Finally, although graduates receive digital certificates and can request diploma supplements detailing learning outcomes and qualification status, it is recommended to implement the issuing of diploma supplements as a standard practice to facilitate international mobility of graduates **(Finding 12)**.

Overall, UFRO upholds high academic standards, reinforced by its rigorous national accreditation process. The primary challenges identified in this review concern inconsistencies in how key information is structured and communicated across programmes. Standardizing the presentation of admission, selection, and certification procedures would significantly improve transparency and accessibility for both prospective and current students. While the selection and examination processes are well-defined, improving clarity and consistency remains essential for strengthening the PhD programmes within the Science cluster (see also Chapter 7, “Public Information”). These improvements would not only enhance the student experience but also reinforce UFRO’s commitment to academic excellence and international competitiveness.

Conclusion

The criterion is partially fulfilled.

5. Academic level of supervisory staff

Doctoral degree

The composition (quantity, qualifications, professional and international experience, etc.) of the staff is appropriate for the achievement of the intended learning outcomes.

Staff involved with teaching is qualified and competent to do so.

Transparent procedures are in place for the recruitment and development of staff.

[ESG 1.5]

Description

General structure of PhD programmes at UFRO

According to the documentation, the SER outlines the structure of academic staffing at UFRO. The academic staff consists of permanent staff entering through a tenure-track search and hierarchized by the Appointments and Promotions Committee. Their salaries are determined by their position, except for Instructors. The group

of non-academic staff comprises academics with fixed-term contracts, not hierarchized and not subject to the Academic Career. Additionally, professionals collaborating in teaching or research may transition to the Regular Academic Body based on defined criteria. The text also discusses the role of visiting academics, who are invited to reinforce specific areas of knowledge and may engage in thesis co-supervision or teaching. Their suitability is assessed based on holding a doctorate and meeting productivity requirements. Moreover, the Institution provides ongoing training opportunities for academic staff to enhance their teaching practices, with approval for a specified amount of time dedicated to such activities.

As outlined by UFRO, academics engaged in professional development, whether through full-time postgraduate programmes or part-time studies, will have their actual hours dedicated to such development considered. These hours must be accredited by the Postgraduate Directorate and documented in a study commission. The Research Directorate provides support and incentives to academics as follows: Research Strengthening initiatives aim to boost research activities within the Universidad de La Frontera, including support for publication fees, research groups, additional equipment for specific projects, and assistance with editing, translation, or review of scientific articles. New Researchers initiatives aim to support research in emerging thematic areas and facilitate the integration of new researchers into the University, including support for doctoral theses. Formative Research initiatives focus on scientific research activities aimed at generating new knowledge to enhance undergraduate teaching and contribute to students' graduation profiles. Economic incentives are also provided, including recognition for highly cited articles, scientific productivity, scientific photography, and productivity in book publications.

Programme specifics

a) Science (specialised in Applied Cellular and Molecular Biology)

The SER outlines that the programme consists of 31 permanent staff members (30 PhD degree holders and one master’s degree holder), ten collaborators, 25 visiting teaching staff members with co-authorisation rights, and three visiting teaching staff members.

b) Engineering Sciences (specialised in Bioprocesses)

The SER outlines that the programme consists of 14 permanent staff members, nine collaborators, and eight visiting teaching staff members.

According to the documentation, academics at UFRO have to commit annually to their academic responsibilities, which encompass undergraduate teaching, community engagement, academic and institutional management, and participation in postgraduate programmes, including the documentation of activities related to project formulation and productivity, as specified in the annex of the SER. Following the SER, the academic backgrounds of faculty members are documented and accessible in the annex documentation.

The current accreditation criteria for academics at UFRO, as established by The Earth Science and Engineering Commission of the Committee of the National Accreditation (CNA), individual orientation requires each faculty member to have 7 WOS (formerly ISI) publications within the last five years. Alternatively, each publication can be substituted by one patent of invention granted as an inventor within the same timeframe. Additionally, group orientation necessitates that at least 60% of the faculty participate in a relevant research project in the specified areas and types within the last 5 years.

c) Agri-Food and Environmental Sciences

The documentation enlists that the programme has a total of 28 academics involved in the programme (16 permanent members and 12 members with annually renewable contracts). There is no differentiation between their affiliation to other institutions.

d) Natural Resources Sciences

The documentation on the SER includes 35 full-time members and 13 collaborators. The SER specifies that the programme includes nine members for the area “Soil and environmental sustainability”, eight for “Nutrition and Plant Physiology, and Agri-Food Security”, nine for “Environmental Biotechnology, Ecological Chemistry, and Bioproducts”, and eight for " Water Resources, Environmental Ecology and Valorization of Agroindustrial Waste”.

Experts’ evaluation

The panel of experts agree/confirm that all teaching personnel involved in the programmes have their academic qualifications and research activities thoroughly documented, ensuring transparency and credibility. The programmes have a well-defined framework for academic staff development, supporting continuous improvement and alignment with academic standards. Visiting Professors are eligible to participate in thesis co-supervision and teaching, provided they meet clearly established criteria, including productivity benchmarks set by the Chilean National Accreditation Commission. The academic staff showcases strong research profiles enabling the supervision and support of future generation PhDs. Some of the programmes are rather young with others well established over a long time, leading to differences of current student-to-supervisor ratios without negative or exceptionally positive impact on quality of supervision.

A challenge not limited to the academic community of the University is the rigorous implementation of English skills as a relevant tool for international academic exchange, particularly when looking at globally competitive research projects. Teaching staff with strong English proficiency can effectively deliver content in English and engage with international colleagues. This competency is crucial for PhD programmes aiming to attract international students and foster a global academic environment. Consequently, UFRO is strongly encouraged to increase English proficiency among teaching staff to enhance internationalisation and competitiveness **(Finding 11)**.

Additionally, the university should consider to more systematically and stronger include international guest lecturers and supervisors for thesis. This would help to increase international exposure also for those PhD candidates who do not go abroad or face limitations regarding mobility. In line with the mission of the university and also recognizing the relevance of the institution for the region the field of internationalization at home should not be underestimated. In some programmes the panel of experts already sees promising initiatives that should be further developed and intensified.

Conclusion

The criterion is fulfilled.

6. Support and research environment

Doctoral degree

Guidance and support are available for students which include advice on achieving a successful completion of their studies.

Appropriate facilities and resources are available for learning and research activities.

[ESG 1.6]

Description

General structure of PhD programmes at UFRO

Support

According to the documentation, the Vice Presidency for Research and Postgraduate Studies was established at the Universidad de La Frontera to formulate policies and mechanisms for resource allocation to areas of excellence in research and postgraduate studies. Within this structure, the Postgraduate Academic Directorate (DAP) operates as an academic-administrative unit tasked with coordinating postgraduate activities and accrediting programme academic bodies. The mission of DAP is to maintain and enhance the quality of postgraduate programmes while fostering collaboration with national and international institutions. In terms of student support, the DAP provides induction sessions covering financial obligations, scholarships, and administrative procedures. Students have access to various internal scholarships, including tuition fee exemptions, maintenance scholarships, and completion scholarships for doctoral theses. Additionally, connectivity scholarships, internationalization scholarships, and I+D+i+e internship scholarships are available to support students' academic and professional development.

According to institutional regulations, the director determines the percentage of tuition fee exemption based on students' academic backgrounds, utilizing forms available on the website. Academic dedication is governed by these regulations as well. Academics with a 44-hour contract must allocate a minimum of 8 direct hours to undergraduate and postgraduate teaching, or equivalent semester-long courses, while only accredited professors can assign hours for postgraduate programmes. Academics with contracts ranging from equal to or greater than 22 hours and less than 44 must dedicate a minimum of 6 direct hours to teaching. Thesis supervision entails a weekly dedication time of two hours per topic for undergraduate programmes and three hours per topic for postgraduate programmes. Additionally, preparation and assessment tasks for academics with contracts of equal to or greater than 22 hours are calculated with a maximum factor of 1 hour per direct hour. Thesis evaluators and participants in degree examinations may allocate a maximum of 1 hour per week. Lastly, all academics with workloads of equal to or greater than 22 hours must allocate 2 hours exclusively for student support, with schedules communicated at the semester's beginning.

Research environment

According to the Internationalization Policy of the Universidad de La Frontera, the institution views international engagement as a dynamic process involving the entire university community to integrate an international and intercultural dimension into its activities and enhance its international networks. This policy was reinforced through the Performance Agreement in Doctoral Internationalization, aimed at increasing programme visibility and improving indicators related to research and innovation. In terms of professional development guidance, the institution offers initiatives such as the Postgraduate Summer School, Internship in the Industry program, TOEFL Scholarship, and support for attending scientific events. These programmes aim to enhance cross-cutting competencies, provide practical experiences, improve language skills, and facilitate attendance at scientific events for postgraduate students, fostering collaboration and networking with external organizations in various thematic areas.

Resources

According to the infrastructure and equipment provisions for thesis research, professors accommodate their students in respective laboratories, providing necessary resources. Additionally, the Universidad de La Frontera established the Scientific and Technological Centre in Bioresources (BIOREN-UFRO) in 2009, equipped with cutting-edge resources such as flow cytometers, confocal microscopes, and chromatography-mass spectrometry platforms, facilitating access to high-performance technologies. Institutional funding supports technical personnel for equipment operation, advancing research opportunities across Bioresources and

Biotechnology disciplines within doctoral programmes. Furthermore, to ensure access to literature and information sources, UFRO subscribes to specialized databases and electronic journals, offering resources such as Web of Science, Scopus, and JSTOR. Continuous training sessions on library services and database management are conducted regularly, enhancing accessibility. The university library provides a significant collection of print materials, e-books, electronic journals, and resources in the Digital Library UFRO. Additionally, access to bibliographic resources from other universities affiliated with the Chilean Council of Rectors is facilitated through a Cooperation Agreement, further enriching research resources available to doctoral students.

Programme specifics

a) Science (specialised in Applied Cellular and Molecular Biology)

According to the SER, the PhD programme boasts comprehensive infrastructure, including state-of-the-art scientific laboratories, a library and documentation centre, and meeting rooms equipped with video conferencing capabilities, multimedia equipment, and audio systems. The Doctoral Building, established since 2017 through the Performance Agreement in Doctorate Internationalization (FRO1204), houses three postgraduate programmes and includes classrooms, meeting rooms, offices, an auditorium, and workspace areas. Shared spaces across the university campus are accessible through virtual tours, providing students with additional resources. The BIOREN-UFRO Scientific Technological Platform supports research activities with advanced infrastructure and equipment. The Postgraduate Room (D-206) offers seating for 68 students, equipped with videoconferencing and amplification systems. Additionally, the Department of Basic Sciences Meeting Room accommodates up to 20 students. The university subscribes to specialized databases and electronic journals, providing access to resources such as Nature Magazine, Science Direct, Springer Link, and Annual Reviews, facilitating research endeavours for doctoral students.

b) Engineering Sciences (specialised in Bioprocesses)

The programme offers students access to infrastructure and laboratories tailored for teaching and research activities. These spaces are managed by the Department of Chemical Engineering and the Scientific and Technological Bioresource Nucleus (BIOREN), which is formally associated with the Programme. BIOREN-UFRO focuses on multidisciplinary research and development in biological resources and bioprocesses, offering specialized centralized laboratories for researchers and external institutions. The faculty members affiliated with BIOREN contribute to various research centres within the nucleus. The Programme's experimental activities primarily occur in laboratories managed by BIOREN, the Department of Chemical Engineering, and CIBAMA. Equipment maintenance is sustained through project operational expenses, ensuring resource availability for programme activities. The PhD programme operates in a dedicated building, shared with two other doctoral programmes, equipped with classrooms, meeting rooms, an auditorium, and administrative offices. The Library Directorate supports the programme with bibliographic and information resources, including access to electronic databases, journals, and books. It is stated that these resources cover thematic areas associated with the programme and are accessible remotely, facilitated by the HATENEA programme. Additionally, the library provides study spaces for individual and group use.

c) Agri-Food and Environmental Sciences

The research infrastructure for doctoral students in Agri-Food and Environmental Sciences encompasses various spaces and laboratories distributed across multiple locations. Key facilities include the Maquehue Experimental Field and the Rucamanque Ecological Park, catering to agricultural, livestock, and environmental research. Additionally, specialized laboratories within the faculty cover a wide range of research areas, including landscape ecology, biometry, agroecology, molecular biology, animal production, and ecological chemistry, among others. These facilities, along with shared spaces like the Fruiticulture Centre and the Scientific and

Technological Nucleus in Bioresources (BIOREN), provide comprehensive support for research, teaching, and professional development. The university subscribes to specialized databases and electronic journals, facilitating access to a wealth of academic resources. Regular training sessions on library services, including database management, are conducted for the convenience of students and faculty. The library boasts a substantial collection of print materials, ebooks, electronic journals, and resources in the UFRO Digital Library, ensuring ample availability of literature for doctoral research. Additionally, through a cooperation agreement with affiliated universities, students can access additional bibliographic resources not available within the university's library system.

d) Natural Resources Sciences

The PhD programme is housed in a dedicated building with comprehensive facilities for Engineering, Bioprocesses, and Applied Cellular and Molecular Biology. The programme actively engages in various agreements and initiatives to enhance research and development, including the "INES Open Science 2021" agreement and participation in the Science 2030 consortium. It collaborates with the Scientific and Technological Bioresource Centre (BIOREN), benefiting from its state-of-the-art equipment and projects like the SmartC-BIOREN.

The programme offers students access to extensive infrastructure, including laboratories and shared institutional spaces, totalling over 3,231 square meters. The Maquehue Experimental Station provides an additional 7,140 square meters. The equipment is described as sufficient, with specialized technicians providing support.

Financial support is available for students, including scholarships and funding for scientific events and internships. The programme also provides student services such as mental health support and recreational facilities. However, there has been a noted decrease in collaborative activities with companies in the productive sector, which could be considered a weakness.

Experts' evaluation

Overall, the expert panel members concur that adequate visibility and general as well as programme-specific information is provided to facilitate access to course/module descriptions, including information on intended learning outcomes, methods of learning and teaching, relevant admission and assessment of performance. Adequate criteria and procedures define and govern the participation of academics in postgraduate programmes, responsibilities are clearly described and communicated in a transparent manner.

The doctoral programmes are provided with the opportunity to jointly use a dedicated, common facility/building where academic and administrative activities are located. The expert panel found that doctoral students are provided with a very appropriate research environment including material resources (e.g., computer workplaces, laboratories, technical equipment, library and archives, etc.) and apt/up-to-date, impressive laboratory facilities which are cutting edge and very well equipped. There is evident support from technical staff. The adequate level of maintenance of facilities is appropriately demonstrated. The expert panel gathered sufficient detail on context-relevant and locally relevant scholarships available for the respective programmes, learned more about agreements in place supporting international cooperation as well as possibilities for joint supervision of students, joint/double degree agreements with other Universities abroad are in place (e.g., with the University of Malaga, Spain, etc). Notably, there are various and appropriate opportunities for participation in national and international exchange, that are made available to PhD students via attendance in workshops, participation at conferences and/or (research) mobility grants. Conversations with students highlighted the importance for research stays abroad or internships with industry, highlighted via examples, e.g. within the framework of the Natural Sciences Programme. Scholarships to support students in all programmes are available but there is a demand to increase access to and extent of such support. The need appears evident, especially in some programmes (e.g., in the Agri-Food and the Environmental Sciences Programme). Incentives are provided (in some programmes), such as PROENTA. Study frameworks consider student diversity

when allocating, planning, and providing learning resources and student support. Moreover, an adequate level of awareness is also reflected by the institutional and individualised advisory services available to students (e.g., dedicated time frames/slots and ad-hoc consultation hours with academic advisors). The doctoral programmes are committed to developing actions to respond to needs and overcome gaps, for example regarding student supervision and planning for the attainment/expansion of soft (transferable) skills and others (for example biostatistics) necessary for strengthening perspectives for a more diverse professional careers of future graduates.

In order to further underscore cross-sectoral collaborative actions, and more clearly support a dissemination of the value of the PhDs to society in general, including industry, the university could consider adding and implementing further actions to increase/strengthen interaction and visibility of PhD programmes across the cluster to further highlight inter/multi-sectoral collaborative actions, and more clearly support dissemination of the value of the PhD programmes to the industry and society in general. Interdisciplinary collaboration is increasingly recognised as essential for addressing complex global challenges. Initiatives like a "PhD Day," where students and faculty from different programmes gather to share research and network should be implemented to foster a culture of interdisciplinary exchange (**Finding 8**). Such practices align with global trends in higher education, enhancing potential for innovation, enabling cross-pollination of ideas, and allowing for the development of networks in and outside academia.

Conclusion

The criterion is fulfilled.

7. Public information

Doctoral degree

Impartial and objective, up-to-date information regarding the programme and its qualifications is published regularly. This published information is appropriate for and available to relevant stakeholders.

[ESG 1.8]

Description

The Postgraduate Academic Directorate (DAP) conducts communication campaigns to promote academic offerings through various digital media channels, including META (Instagram and Facebook), LinkedIn (Lead Form), Programmatic, Google Search, and YouTube. A campaign spot for postgraduate studies can be viewed here: [link to campaign spot]. Additionally, there is a pilot platform for candidate applications for programmes in the admission stages available.

At the Postgraduate Academic Directorate level, detailed programme information is accessible on the website, providing descriptions of the programmes, graduate profiles, curriculum details, research lines, faculty information, admission requirements, national accreditation status, contact details, and links to the official websites of each postgraduate programme. It is said that this information is regularly updated and disseminated during respective admission periods.

Experts' evaluation

UFRO employs a comprehensive yet evolving framework for disseminating public information about its postgraduate programmes. The main postgraduate website serves as a centralized entry point, providing overviews of programme descriptions, graduate profiles, study plans, research lines, faculty lists, admission

requirements, and contact details. These summaries are well-structured and require users to navigate to individual programme sites for more comprehensive details.

While all four programmes under evaluation provide essential information, the respective programme websites vary significantly in structure and comprehensiveness, making it difficult for users to locate similar types of information across programmes. Additionally, UFRO would benefit from adopting a common standard for presenting their admission, selection, and certification procedures on their subpages. This standardization would not eliminate programme-specific details but would ensure that common elements, such as references to shared laws, rules, or requirements, are easily recognizable and comparable across programmes. Additionally, electives, specialty courses, and examination procedures (e.g., "Examen de Calificaciones" and "Examen de Grado") are not uniformly detailed, and none are available in English. Programmes do not provide a consolidated list of electives, nor do they clarify cross-programme opportunities for students. Furthermore, research activities beyond mere publication records or listing of infrastructure are not sufficiently detailed or prominently placed, limiting insights into practical research opportunities or real-world impacts. Collaborative projects, applied research initiatives, and practical impacts are underrepresented and not strategically highlighted, limiting the programmes' ability to showcase their full academic potential. From the expert's point of view the programmes deliver and provide way more than what is publicly demonstrated highlighting the opportunity to easily improve public information. Most critically, research lines should be consistently mapped to faculty expertise, which is critical for aligning student research interests with supervisors and enhancing programme coherence (**Finding 14**)

Accessibility for international audiences is another area of concern. Although UFRO's main website, faculty sections, and selected news are available in English, the postgraduate programme page defaults to Spanish, limiting accessibility for non-Spanish-speaking users. When navigating to the individual programme's websites, some programmes mitigate this by offering partial translations (e.g., BIOMOL providing a PDF with detailed information for prospective applicants in English), while others rely on automated tools like Google Translate. A unified approach to bilingual content, especially for key sections, like admission criteria, curricula and examination procedures, would significantly enhance accessibility.

UFRO excels in marketing and visibility through diverse channels, including META platforms, LinkedIn, and YouTube, and targeted events like research fairs and preparatory workshops. This enhances programme reach and appeal. Websites and central repositories are managed by dedicated teams, such as journalists for some programmes, ensuring professional updates.

In summary, UFRO meets the basic criteria for disseminating impartial, objective, and up-to-date information. Key details about the study programmes are available, and marketing efforts enhance visibility. However, improvements are recommended to streamline programme websites and standardize the presentation and accessibility of information. Specifically, enhancing the presentation of research lines, curricula, and applied projects will improve accessibility and showcase research strengths.

Conclusion

The criterion is fulfilled.

V. Recommendation of the panel of experts

Commendation:

Universidad de La Frontera earns strong commendation for its meticulous attention to quality assurance, as reflected in the institution's thorough processes for continuous improvement. By employing structured feedback loops with students and faculty, supported by tools like SEPLAD, the University ensures that doctoral programmes are consistently evaluated and refined with clear, data-informed strategies. These mechanisms help maintain high academic standards while providing transparency and inclusivity in decision-making, creating a culture where every stakeholder's insights are respected and harnessed for the benefit of the programmes.

Equally laudable is the University's efforts in designing rigorous, forward-thinking curricula that align with both Chile's National Qualifications Framework and recognized European benchmarks. Doctoral students benefit from a coherent structure of coursework, focused research milestones, and supportive learning environments that foster advanced scientific inquiry. Moreover, the University's commitment to student well-being—including robust guidance, flexible leave policies, and opportunities for international collaborations—demonstrates how thoroughly the institution values the personal and academic success of every doctoral candidate. Taken together, these elements underscore the University's dedication to cultivating excellence, relevance, and inclusivity across all assessed doctoral pathways

Findings:

1. English language skills must be integrated as mandatory elements across all doctoral programmes.
2. Curricula should include modules on spin-offs and soft skill development.
3. The Engineering programme with a specialization in Bioprocess should also consider further developing the programme in line with current developments in the labour market and non- academic industry needs.
4. The programme Natural resources Sciences should provide a broader range of elective subjects to allow for greater academic and professional specialisation.
5. Student representation should be increased/ensured across programmes and their representation and or active involvement in decision-making committees.
6. The postgraduate school should implement a robust framework to ensure harmonization/uniformity in structure and QA instruments/approaches across all four doctoral programmes.
7. The University has to present an analysis of expected and realised student workload and implement measures reducing the risk of overburdening workload causing burnout.
8. Efforts to significantly advance/enhance collaboration with industry should be further strengthened.
9. An appeals process for the assessment has to be defined, implemented and also made known to the candidates.
10. Admission requirements for the PhD programme "Ciencias de la Ingeniería Mención Bioprocesos" need clear differentiation between mandatory and recommended criteria.
11. UFRO should consider a more unified and standardized public information about its programmes and admission requirements.

12. If not already implemented, (multi-lingual) Diploma supplements should be provided as a standard practice upon graduation.
13. Measures should be established to rigorously support the development of further English proficiency among teaching staff.
14. Initiatives such as "PhD Day" should be further developed and supported to foster and facilitate further increase in cross-disciplinary interaction and allow for greater visibility of the programmes.
15. Research lines should be clearly mapped to the expertise of the teaching body across all programmes in the publicly available information.