CALL AND INSTITUTION INFORMATION

Program – Capes/PrInt | **Call 41/2017 – Capes/PrInt**
Institution - Universidade Federal de Santa Maria
Institution acronym - UFSM

PERSONAL INFORMATION

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INSTITUTIONAL COMMITTEE

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Field of research: Chemistry
Admission date: 07/1998

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Admission date: 01/1998

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DIAGNOSTICS

Strengths

Title - International Affairs Office
Justification - The internationalization of graduate programs and research groups is essential in order to increase the quality and impact of scientific production. In order to institutionally support this internationalization, it is necessary to create internal structures to facilitate and put into operation the initiatives of research groups, graduate programs and researchers. UFSM has had an internal structure geared specifically toward this support for over ten years—the International Affairs Office (Secretaria de Apoio Internacional – SAI). SAI is responsible for aiding and guiding researchers and students in the establishment of bilateral and multilateral programs, the formalization of international cooperation agreements, all protocols related to reception of foreign students and researchers and other activities related to the establishment of scientific collaboration. SAI is prepared to provide all needed information and logistic support to graduate programs, research groups, professors, staff and students.

Title - Institutional standardization for joint degree programs
Justification - Joint degree programs between UFSM and foreign partner institutions allow students to carry out their studies under the joint supervision of researchers from both institutions. This highly internationalized form of study provides truly unique experiences for the students and their respective research groups. This type of study needs a legal institutional framework, with approval from both participating institutions, ensuring judicial legitimacy and security while allowing the process to be operationalized with ease. UFSM has already participated in a number of joint degree programs. In this sense, the elaboration, discussion and approval of necessary legal procedures, which often entails slow and tiresome processes, has been fully carried out at UFSM, opening up the opportunity for our students as well as foreign students to collaborate on joint projects.

Title - Institutional program for reception and accommodation of foreign visiting professors and students (Inter-house)
Justification - One of the essential parts of research group interaction is the visitation of foreign professors to UFSM and of our professors to foreign institutions. These visits encourage our researchers and students to improve foreign language skills, especially English, which is normally not used in the context of day to day academic activities. In addition, this interaction plays an important role to strengthen and solidify interpersonal relationships which are fundamental to long-lasting collaborations. UFSM has a special program for temporary hiring of foreign visiting professors, which has positively contributed to the work of graduate programs and their research groups from the direct interaction of these foreign professors with UFSM professors and students. The program stipulates earnings equal to that of a full professor salary. Currently, there are 30 professors in activity through the program with prospects to increase this number in the near future. Another form of personal interaction are work and study missions, as established in the joint research projects. These missions are fundamental in achieving the desired results. One of the most important factors involved in such missions is adequate accommodations for visiting participants here for a short period. UFSM possesses a hotel conveniently located on the main campus especially designed for visiting students and professors. The hotel's costs are covered by UFSM's own budget.

Title - Online defense and web-conferences
Justification - One of the biggest challenges for joint research projects is the distance between research groups in Brazil and collaborators in Europe, Asia and North America, which limits the regular contact between research group members. UFSM, in particular, is located in the center of the southernmost state of Brazil, making it disadvantaged in terms of ease of mobility, both for those student and professors traveling from UFSM and those coming here. Current communication technology, however, significantly mitigates these barriers, allowing direct contact via the web. To ensure this communication, it is necessary to create a reliable infrastructure with a safe and fast internet connection. This access must be widely available to the entire academic community. Currently, UFSM has 15 rooms prepared for defenses and web-conferences and there is a project to double this capacity in the near future. This technological capability is an important building block for internationalization.

Title - Internationalized research groups of excellence
Justification - The sine qua non for establishing international partnerships is the caliber of our researchers and research groups. Without an international level of excellence, collaborations tend to be characterized by unequal relationships, where Brazilian groups end up carrying out tasks proposed by the foreign partners, resulting in a workforce for foreign research, often addressing themes that are of interest mainly to the foreign research group. In order to ensure equal partnerships, it is essential that our research groups have an equivalent level of professional training that can produce knowledge of interest to both parties, joining forces to achieve goals that could not be achieved alone. UFSM has several highly-qualified research groups in certain areas of knowledge, which could benefit greatly from the strengthening of relationships with qualified foreign groups, providing our students with experiences capable of transforming them into future scientific leaders, fully active within the context of international scientific production.

Weaknesses

Title - Deficient mechanisms for international dissemination
Justification - Mechanisms for dissemination are primordial in the attraction of international research partnerships and students. Similarly, popularization of the scientific knowledge and products generated at UFSM are important to ensure they reach and meet the needs of the community. UFSM still lacks improvements in international dissemination of its scientific activities and results. Weaknesses include: lack of multilingual access to all information on the graduate program websites; lack of an institutional policy for dissemination at different international research events; need to solidify a culture of international communication of science and technology; and need for new and improved tools for web transmissions. Internal policies geared toward improved international dissemination mechanisms have been discussed and approved by the Administration, including distance learning events for international research groups, technological modernization and funding for website improvement. It is hoped that these actions will result in the improved international publicity and consequently attract foreign students and researchers.

Title - Lack of foreign language skills
Justification - Creating a multilingual environment in all sectors of the university is vital to meeting the demands of internationalization. Although English is considered the main language for scientific communication throughout the world, higher education institutions in Brazil have traditionally failed to provide infrastructure to enable students, faculty and staff to reach a high level of proficiency in English. Although the International Affairs Office at UFSM has a qualified team with a high level of English proficiency, other sectors do not present the same level of proficiency. Other shortfalls include bureaucratic obstacles to the widespread use of English in faculty and student selection processes, the non-inclusion of English in the curricula of some graduate programs and the lack of multilingual access to graduate program websites, all of which have hindered the university from increasing its level of internationalization and in international rankings. Some actions developed to respond to these needs are the offer of foreign language courses for students, faculty and staff in Massive Open On-line Courses, and the Languages without Borders program for traditional and distance courses in English, French, German, Italian, Spanish and Portuguese as a Foreign Language.

Title - Insufficient financial funding for internationalization
Justification - Budget reductions have become the main obstacle in the continued scientific growth of UFSM. In the last four years, the university has undergone a 54% budget cut, which has affected investments that could have been passed on to research and internationalization of the Graduate School but had to be transferred to other sectors. However, despite this reduction, our graduate programs have made progress. According to the last quadrennial evaluation, approximately 27 % of the graduate programs had increased their scores, leading to an increased mean score. Institutional strategies have been proposed to counteract this weakness, including the creation of an Institutional Internationalization Fund for the Graduate School and the program for hiring foreign visiting professors.

Title - Need to modernize the Moodle Virtual Learning Environment.
Justification - The use of information and communication technologies by graduate teaching programs diminishes geographic distances and allows greater interactivity among research partners from different international institutions. In this sense, the modernization of Moodle for distance learning modalities is fundamental in the dissemination of knowledge and the close collaboration of international research groups. UFSM has worked to create Moodle courses in the most diverse areas of knowledge. However, the traditional teaching method is still predominant in most of the graduate programs, which impedes enhanced internationalization. UFSM currently has 15 rooms equipped for web conferences that need physical upgrading to meet international demands. In order to make possible the development of virtual learning and scientific collaboration, the UFSM administration has proposed the creation of an Institutional Internationalization Fund for the Graduate School.

Title - Reduced capacity to attract foreign students and faculty
Justification - The attraction of foreign students is one of the greatest challenges for higher education institutions and directly affects UFSM's international ranking. In this sense, the number of foreign faculty at UFSM has been relatively stable but low over the last five years, considering that out of the approximately 2,000 faculty members, only 1.3% are foreign. Bureaucratic impediments, such as not having hiring processes in English, and the geographic distance from large urban centers in the

country are a couple of factors that may have an affect on these figures. In terms of attracting foreign students, although there has been an increase in the total number of foreign students, especially in graduate programs, this number is still low compared to other centers of excellence in research. Increasing the number of foreign students and faculty at UFSM is one of the goals of the Institutional Development Plan and is considered an important part of internationalization as it allows the exchange of knowledge and the development of new research routines, as well as providing a multicultural environment that fosters the intellectual development of the university community. Strategies have been developed both by the Administration and SAI to create an environment capable of attracting foreign students and faculty. One of these strategies is the creation of multilingual calls for foreign professors.

WELL DEFINED INSTITUTIONAL VOCATION

Yes.

INSTITUTIONAL VOCATION

The vocation of the Universidade Federal de Santa Maria is to develop qualified human resources and research in applied sciences, innovation and technologies geared toward strengthening national sovereignty.

Describe other information about the level of internationalization of your institution

The Universidade Federal de Santa Maria is a Federal Higher Education Institution, established as a Special Autarchy linked to the Ministry of Education and created by Law n 3.834-C, of December 14, 1960 and originally denominated the Universidade de Santa Maria. It was later federalized by Law n 4.759, of August 20, 1965, and renamed the Universidade Federal de Santa Maria. UFSM's founding principles include its Mission, Vision and Values. UFSM's Mission is to create and disseminate knowledge, committed to development of people with the capacity to innovate and contribute to the sustainable development of society; its Vision is to be recognized as an institution of excellence in the creation and dissemination of knowledge, committed to the innovative and sustainable development of society; and its Values are commitment to education and knowledge, guided by: Freedom, Democracy, Ethics, Justice, Respect for Identity and Diversity, Social Engagement, Innovation and Responsibility. Since its foundation, UFSM has upheld is original vocation, with strong ties to the agribusiness sector and highly qualified graduate and undergraduate courses in all areas of knowledge in the Rural Sciences, which has its origins in the 1960's Osvaldo Aranha Project, financed by the FAO, to develop the sector. Today, the strength of programs in these areas can be seen by productivity indicators on the SciVal Platform. In the last 5 years, almost 28% of the scientific production at UFSM was from the areas of veterinary medicine, biological sciences and agriculture. More recently, UFSM has also shown a strong vocation in the areas of chemistry, biochemistry, pharmacology and engineering. One important event related to the institution's internationalization was the implantation of the Graduate Course in Education, with support from the OAS in the 1960's, which was the origin of internationalization. Another relevant aspect was the direct participation as signatory in the creation of the Associación de Universidades Grupo Montevideu (AUGM) and active participant in the program's many modalities.

INSTITUTIONAL PROJECT

Goals of the Institutional Project - The Institutional project of Internationalization were elaborated following the guidelines contained in the Institutional Development Plan and the guidelines of public agencies such as Capes. The objectives of the Institutional Internationalization project are to: foster the construction, implementation and consolidation of strategic internationalization plans in the areas of knowledge prioritized by the institution; stimulate the formation of networks of international research linked to the Graduate Programs, aiming to improve the quality of academic production and increase international visibility; expand support for internationalization of the Graduate Programs, prioritizing programs of excellence; promote the mobility of teachers and students, with emphasis on doctoral students, postdoctoral students and professors abroad, seeking reciprocity of foreign participants in Brazil, linked to *stricto sensu* Graduate Programs that have already established international

cooperation ties; foster the transformation of the institution into an international environment by creating spaces for coexistence, accommodation and information; integrate other actions promoted by Capes, CNPq and other agencies for internationalization. The feasibility of the Institutional Plan of Internationalization requires fulfilling the following key needs: expand the physical and personnel structure of the International Affairs Office (SAI); organize and fund means for the internationalization of academic production; disseminate among students, researchers, research groups and graduate programs a culture of internationalization; consolidate the process of internationalization through the organization of routines and norms that facilitate and encourage these actions; include support and incentives as positive evaluation criteria in calls and internal calls of the institution, as well as in the selective processes for Graduate Programs; stimulate production and dissemination in English of course offerings, technical information of laboratories, offer of student spots and job hiring; offer part of the courses of undergraduate and graduate programs in English; strengthen the infrastructure of the Language Center and Languages Without Borders; create an Internationalization Unit in the PRPGP.

THEMES

Theme 1: One Health

Partner countries - Canada; United States; Spain; Netherlands; Denmark; Italy; Germany; Mexico.
Justification - The concept of health has been modified to reflect the inseparable relationship between animal, human and environmental health, with the proposal of a new concept— One Health. In order to implement the concept of One Health, a transdisciplinary approach is essential, resulting in actions to guarantee food safety, reduce the risks of zoonoses and other threats to public health (such as cancer and metabolic diseases) in the man-animal-ecosystem interface. Thus, the convergence between animal health and human health in the search for new solutions is the essence of One Health. The integration of professionals from different areas of knowledge, such as animal health, human health, food safety, plant health and the environment is essential to overcome the barrier that separates these areas and enable the knowledge / tools / approaches generated in one area to accelerate the progress of the others and provide more efficient promotion of public health. In this sense, the knowledge generated in the areas of Veterinary and Animal Reproduction and Nutrition can contribute to advances in human nutrition, health and development. By articulating between these different areas, it is possible to find more rational and effective ways to solve the problems faced in a world in constant development. This theme encompasses two projects: Animal health and welfare and pharmacological and nutritional strategies for health promotion.

Goal 1 - Study the mechanisms of reproductive functions and their interactions with organisms and develop technologies to improve food production and quality, aiming at the welfare of people and animals.

Description - The objective is to train human resources for the development of biotechnologies applied to understanding reproductive disorders and their interactions with organisms. Reproductive efficiency is the main pillar of animal production. In humans, low fertility has become a major public health problem, requiring significant investments in assisted reproductive therapies. Thanks to advances in our knowledge about the mechanisms that regulate reproductive processes and their relationships with other metabolic functions, several reproductive biotechnologies have been developed to mitigate reproductive problems in animals and humans. A number of reproductive biotechnologies has been incorporated into animal selection programs for genetic increase, including artificial insemination, estrus synchronization, embryo transfer, cryopreservation of gametes and embryos, and, more recently, assisted selection based on DNA markers. Other technologies, such as reproductive cloning by nuclear transfer and transgenics, are in the stage of improvement and, despite their great potential, have not yet been incorporated into animal production and selection systems due to efficiency and / or regulation. Advances in genomics, molecular biology and bioinformatics have enabled the creation of technologies to promote genomic editing in a specific, effective and simple way, which were unimaginable until recently. These new technologies have generated great expectation about the potential impact on different segments of animal production. For example, the genomic editing has the potential to revolutionize current methods of genetic selection, as it enables animal breeding with adjustment of multiple characteristics, including productive, sanitary, environmental and animal welfare attributes. Recent experiments include breeding animals with higher carcass yields (more meat and less fat), resistance to infectious diseases (e.g. Tuberculosis, Foot and

Mouth Disease, Reproductive and Respiratory Syndrome) and hornless. Genome editing techniques, especially technologies based on the CRISPR / Cas system, are making it possible to radically advance our understanding of physiological and pathological mechanisms.

Goal 2 - Train researchers with knowledge and vision for developing recombinant vaccines against viral diseases and biotechnology techniques applied to animal health and welfare.
Description - Providing opportunities for students and young talents to participate in the process of internationalization is a priority. The internationalization activities aim to strengthen the graduate programs, train professionals with excellence and generate science, technology and innovation with a positive impact on society. For this reason, student mobility among the participating universities is essential in short and medium-term academic missions of graduate students, with the purpose of developing or improving techniques that may help accomplish experiments and, consequently, improve the quality of publications. Sandwich students (one year) and postdoctoral students on short- and medium-term international missions are expected to participate, in order to strengthen and possibly expand the network of international collaborations. Students will also present joint scientific results at international meetings originating from the collaborations of the international networks.

Goal 3 - Consolidate participation of professors in international networks in the development of vaccines against viral diseases of strategic importance and biotechnologies applied to animal health and welfare.
Description - This objective prioritizes participation of teachers in the process of internationalization, considering that all international collaboration should be reciprocal. In this sense, this project plans annual visits of professors to partner laboratories to establish new thematic projects that provide the maintenance of long-term collaborations and to attend international meetings with the objective of strengthening the medium and long-term interaction with the international academic community, as well as annual visits of international researchers for short- and medium-term visits in collaborating laboratories to establish and consolidate research lines. In addition, renowned international researchers who are visiting will offer courses and lectures in a foreign language at UFSM, an excellent opportunity for all members of the graduate programs.

Goal 4 - Consolidate and expand participation of professors in international networks in the areas of nutritional and pharmacological strategies and sustainable attitudes for health promotion.
Description - This objective prioritizes participation of teachers in the process of internationalization, considering that all international collaboration should be reciprocal. In this sense, this project plans annual visits of professors to partner laboratories to establish new thematic projects that provide the maintenance of long-term collaborations and to attend international meetings with the objective of strengthening the medium and long-term interaction with the international academic community, as well as annual visits of international researchers for short- and medium-term visits in collaborating laboratories to establish and consolidate research lines. In addition, renowned international researchers who are visiting will offer courses and lectures in a foreign language at UFSM, an excellent opportunity for all members of the graduate programs.

Goal 5 - Understand the diseases and treatments that affect the reproductive system in humans through translational models.
Description - With a better understanding of these mechanisms, it will be possible to effectively intervene in the treatment of reproductive diseases in humans, such as congenital adrenal hyperplasia and to assist in the management of disorders such as polycystic ovary syndrome and hypogonadotrophic hypogonadism. In addition, there is evidence indicating that these technologies will allow for the creation of transformative therapeutic interventions and may facilitate the adaptation of plant and animal life to meet the changes occurring on our planet. Many scholars agree that this sudden and dramatic ability to modulate evolution with the potential to rewrite life will bring about consequences that are as important and wide-reaching as those arising from the industrial and digital revolutions. In this context, our international cooperation program will allow access to new technologies, such as genomic editing, in addition to training the next generation of multidisciplinary researchers, including fundamental aspects of reproduction biology and development of genomic, cellular and reproductive biotechnologies.

Goal 6 - Develop, implement and share new knowledge and methodologies with a focus on intelligent molecules and sustainable attitudes to promote health, fostering transdisciplinarity.

Description - Acquire new knowledge in the areas of synthesis, toxicology and pharmacology of organic and natural compounds, proposing molecules for therapeutic options to treat diseases, using alternative models (C. elegans and yeasts) or conventional ones (vertebrates). The study of the mechanisms involved in the genesis and progression of chronic and degenerative diseases in human and animal models, with the aim of pointing out the use of new molecules, as well as the molecular aspects related to the toxicology of metals, (chemical agents, drugs, etc.) in vertebrates and non-vertebrates. In this sense, the knowledge generated in the areas of Veterinary and Animal Reproduction and Nutrition can contribute to advances in human nutrition, health and development. By articulating between these different areas, it is possible to find more rational and effective ways to solve the problems faced in a world in constant development.

Goal 7 - Study ethiopathogenetic, epidemiological and therapeutic aspects of chronic diseases prevalent in the population, increasing the use of translational models.
Description - To study chronic musculoskeletal diseases and endocrine-metabolic diseases prevalent in the population and to characterize the main ethiopathogenetic and epidemiological aspects of metabolic diseases (obesity, osteoporosis, vitamin D deficiency, diabetes mellitus, polycystic ovary syndrome, etc.) as well increase the use of translational models. With increased understanding of these diseases, it is possible to contribute to the improvement of the population's well-being and health.

Goal 8 - Train researchers with knowledge and vision to develop nutritional and pharmacological strategies and sustainable attitudes to promote health.
Description - Priority is given to participation of students and young talents in the internationalization process. The internationalization activities aim to strengthen the graduate programs, train professionals with excellence and generate science, technology and innovation with a positive impact on society. For this reason, student mobility among the participating universities is essential in short and medium-term academic missions of graduate students, with the purpose of developing or improving techniques that may help accomplish experiments and, consequently, improve the quality of publications. Sandwich students (one year) and postdoctoral students on short- and medium-term international missions are expected to participate, in order to strengthen and possibly expand the network of international collaborations. Students will also present joint scientific results at international meetings originating from the collaborations of the international networks.

Goal 9 - Develop/construct vaccine vector platforms for agents of veterinary interest.
Description - Application of technologies and protocols generated from the exchange of experiences and skills for the development / construction of vaccine vector platforms. This objective covers two main lines, according to the expertise of external collaborators: a) development of vector platforms by reverse genetics of RNA viruses, and b) development and construction of DNA virus-based vaccine vectors. We intend to construct and test different vaccine vectors from RNA viruses (flavivirus and arterivirus) and DNA (herpesviruses and poxviruses), evaluating their suitability for vector use, selective deletion of non-essential genes and measurement of their effects , including tolerance to nestle heterologous genes, expression of heterologous genes, stability in cell and animal culture, innocuousness in laboratory animals and, finally, immunogenicity in laboratory animals and species of interest. In addition, we intend to obtain suitable vector platforms for the propagation of genes of pathogens of interest in veterinary medicine. It is also anticipated that the success of this project will result in patent-worthy products and processes capable with high potential for industrialization.

Goal 10 - Develop projects focused on bioactive compounds and food quality for health promotion.
Description - The objective is to train human resources with a focus on the isolation of bioactive compounds and their application in the formulation of functional foods, identification and characterization of bioactive compounds to reduce the risk of chronic diseases and evaluation of food contamination by fungi and pesticides.

Theme 2: Sustainability and intelligent attitudes

Partner countries - Algeria; Austria; Belgium; United States; France; New Zealand; Spain; Canada; United Kingdom; Germany; Australia; Argentina; Mexico; Italy; China.
Justification - People have used natural ecosystems without observing criteria of sustainability, often leading to the degradation and exhaustion of resources, followed by substitution of the activity. With regard to processes of land occupation, the use of natural resources has culminated in the

degradation and marginalization of areas in relation to productive processes of economic valuation. Degraded areas, in the process of natural or assisted recovery, have been considered as impediments to economic activity in rural properties, thus becoming marginalized. Areas with varying degrees of degradation can be recovered and reintegrated into environmental conservation and production processes. As a rescue strategy, conservation by use can be achieved with the introduction of forest management techniques that aim to protect soil and water, as well as improving the quality of vegetation and the ecosystem as a whole. The integrated and multidisciplinary research can contribute to the change of the panorama of degradation commonly found throughout the country, bringing about numerous social benefits by recovering and reintegrating abandoned areas, or areas of low production capacity or protection for the purpose for which they were intended. The rational management of areas allows for economic gain without degrading the ecosystem, as well as preserving the interest of the area's owner and satisfying the needs of society in terms of maintaining the environmental benefits derived from ecosystems.

Goal 1 - Evaluate, develop and implement research and technologies applied to ecosystem management for sustainable production.
Description - Develop and improve tools for assessing and interpreting the current situation, occupation, composition and dimension of ecosystems, developing specific management technologies for ecosystems, ensuring their recovery, ecological conservation and economic yield. In the processes of human occupation, areas have been impoverished and degraded, becoming underutilized. Many of these are in different successional stages and do not present floristic composition of social and economic interest. Rational management allows for their ecological recovery, providing the conservation of soil, water and air, among other aspects such as tourism and the material production of wood, flowers, among others.

Goal 2 - Innovation and transfer of technologies for sustainable territorial development and intelligent societies.
Description - Establish comparative research on territorial development and promote social and technological innovation for sustainable ecosystems among international partners through the exchange of human resources. The socio-technological changes undergone by territories and ecosystems over the last few years present us with the challenge of comparing the different international experiences with regard to intelligent attitudes to guarantee the sustainability of scarce natural resources. It is necessary to better understand the complex relationships established between socioeconomic agents and ecosystems, the different forms of exploitation, market and the construction of alternatives to better promote the processes of communication, technology transfer and social action. To this end, this objective entails promoting research and mobility abroad of graduate students and researchers from the Graduate Program in Rural Extension, receiving foreign researchers who are an international reference in their research areas and establish agreements between Graduate Programs in order to consolidate the Program within a globalized intellectual environment.

Goal 3 - Promote studies on the evolutionary ecology and conservation of the Brazilian biota.
Description - Support integrated knowledge of the fauna and the environment, including the many different landscapes, such as forests, grasslands and pasture and coastal environments. Research to be developed will include the work of taxonomists of various invertebrate and vertebrate groups, ecologists, geneticists, biogeographers, conservation biologists, and evolutionary biologists.

Goal 4 - Attract international research groups of excellence to develop joint activities in Brazil.
Description - Despite the prominent position Brazil maintains within the context of global agricultural production and safeguarding of the planet's biodiversity, the participation of the international scientific community in research carried out in Brazil and designed for Brazil is still small. Many international groups are interested in developing research in Brazil, together with Brazilian researchers, to explore the specificities of our agricultural potential and the environmental importance of natural resources (soil, water, atmosphere and biodiversity). However, many obstacles are encountered in the development of research in Brazil with multinational groups. The underdeveloped infrastructure of laboratories, the lack of knowledge of modern research techniques, impediments to traveling abroad, lack of reciprocity of support from Brazilian groups and other shortcomings discourage international groups from investing in technical cooperation in Brazil. This has negative impacts on the development of Brazilian science, since we carry out the individual scientific practice without exchange of experience with other countries. Over the last 20 years, and especially the last decade, the research group in Soil Science at UFSM has built strong scientific interactions, which need to be consolidated

and expanded. At this point, it is extremely important and strategic that financial support, through funding and mobility programs, be made available to further strengthen the already consolidated partnerships, as well as to implement partnerships that are in the initial phase. In such cases, there is mutual interest in conducting cooperative research, but there are not enough resources to carry out the actions with the needed continuity and frequency, bringing groups together and creating the continuous flow of people and information.

Goal 5 - Qualify scientific and academic training for the development of productive agricultural systems with benefits for the soil, water and atmosphere.
Description - Climate change and the increasing demand for food in the world require agricultural scientists to develop highly productive production systems, but also to generate environmental and social benefits. This new model of agriculture has been widely discussed and evaluated in different countries in the world, seeking to aggregate additional functionalities of the soil, besides production of food. Soils fulfill important environmental and social functions, which must be explored by technicians, professors and scientists in a multidisciplinary way. We can highlight the ability of soils to increase the availability and quality of surface and subsurface water; increase nutrient cycling, reducing the need to use industrialized fertilizers; drain carbon and nitrogen, reducing greenhouse gas emissions; degrade agricultural and industrial pollutants; increase biological control, reducing the use of agrochemicals, etc. However, exploring and applying this knowledge while maintaining or increasing the productive capacity of the soil is a very complex challenge, requiring innovative and robust research, with the capability to convince society, especially managers. One strategy to achieve these goals faster and with higher quality is the development, planning and execution of research with foreign scientists and institutions that are international references. This will allow the development of our students and professors, in the short term and with quality, aiming at the immediate application of this knowledge in solving the urgent problems of Brazilian agriculture.

Goal 6 - Consolidate and expand collaborations with international groups of excellence.
Description - International groups develop research with Brazilian researchers exploring the specificities of our agricultural potential around the theme of Innovative, Intensive and Sustainable Agriculture. The proposal to expand and consolidate this transdisciplinary theme integrates joint international research developed by nine professors from five UFSM graduate programs, namely: Agrobiology, Agronomy, Agricultural Engineering, Soil Science and Animal Biodiversity. Among these courses, two professors carried out a full PhD program, two carried out postdoctoral studies and four carried out a sandwich PhD program; in addition, seven teachers are ranked among the most "internationalized" of UFSM. In the last six years, the proponents produced 248 articles considered international,110 of which were written with foreign collaborators. The proponent group has three foreign patents (Chile, United States and Italy), as well as the copyright of the software and applications of SimulArroz, CropGrow and HibridMaiz models applicable in different countries. Professor Jerson Carús Guedes, and UFSM, and Professor Guy Smagghe, from Ghent University, Belgium, jointly advised Jonas André Arnemann, on the first joint degree PhD in the field of Agronomy. Jonas André Arnemann is currently a professor at UFSM and one of the proponents of the group. These actions are intended to be continuous and frequent, bringing groups together and creating a continuous flow of people and information. In addition, the proponent group has some equipment suitable for large-scale research, which will be fundamental for consolidating and expanding collaboration with international groups of excellence, such as: 1) new generation sequencing platform equipped with an IonTorrent S5 Sequencer, which extends the possibilities of research applied to genomics of plants and insects-pests; 2) automated controlled atmospheric system with 48 chambers and six refrigeration chambers for storing plant products; 3) three gas chromatography systems, one liquid chromatography system and six gas analyzers (O2, CO2 and ethylene); 4) system for the characterization, development and evaluation of bioproducts applied to plant growth and pest control.

Goal 7 - Qualify scientific training for the development of innovative solutions from biodiversity, molecular biology, genomics, bioinformatics, modeling and microbiology.
Description - Among the main specific objectives of this action are: foster the mobility of graduate students and researchers from Brazil to foreign institutions, and vice versa; increase the participation of professors, students and researchers in international scientific events; promote cooperation among the participating GPs (Postgraduate Program in Agronomy, Animal Biodiversity, Soil Science and Agricultural Engineering) and consolidate an internationalized scientific environment.

Goal 8 - Develop studies on biodiversity and ecosystem sustainability: values of pastoral ecosystems in the face of challenges and global changes.
Description - Pastoral ecosystems, particularly natural fields, have several essential functions from environmental, economic and socio-cultural points of view. However, because we do not know enough about their dynamics, characteristics, functions and values, especially how to sustainably use their resources and / or potentialities, pastoral ecosystems are being replaced, often irreversibly, by more productive farming systems in the short term. Although these systems are more productive, they are unsustainable in the medium and long term, both in economic and socio-environmental terms. The GP in Animal Science develops graduate research focused on the value of pastoral ecosystems in the South of Brazil, in partnership with several foreign and Brazilian teaching and research institutions and in several basic and applied disciplines of Agrarian and Biological Sciences. This integration involves postdoctoral studies, sandwich PhDs, scientific events, joint research, courses, lectures, among other activities, which have recently been reinforced by the project "Livestock production systems in the Ibirapuitã River Basin and its relations with water and energy in food production", approved by Call MCTI / CNPq No. 20/2017 - NEXUS II and through coordination of the LIFLOD (Livestock Farming & Local Development) network.

Goal 9 - Increase Interaction with International Institutions of Excellence in Energy Resources.
Description - Increase international collaboration with institutions of excellence, promoting the development of research projects, technical-scientific productions, and academic mobility, among others. The following international institutions already have a history of collaboration with UFSM in the area of Energy Resources: University of Oviedo, Spain; Universitat Politècnica de Catalunya, Spain; University of Florida, USA; Colorado School of Mines, USA; Virginia Polytechnic Institute and State University, USA; Illinois Institute of Technology, USA; New Mexico State University, USA; Aalborg University, Denmark; Fraunhofer Institute for Solar Energy Systems ISE, Germany; Otto-von-Guerike University Magdeburg, Germany; Universität Kassel, Germany; Concordia University, Canada; Queen's University - Kingston, Canada; CNR / ISAC, Italy; Colorado State University, USA; University of Buenos Aires, Argentina; University of Bristol, UK; University of California, USA; University of Tuscia, Italy; Penn State University - PSU, USA; State University of New York - SUNY, USA; University of Oklahoma, USA; Northeastern University of Argentina, Argentina; University of the Coast of Argentina, Argentina; Politecnico de Torino, Italy; Universitá del Piemonte Orientale, Italy; Université Toulouse 3 - Paul Sabatier, France.

Goal 10 - Train Qualified Human Resources in Energy Resources.
Description - Training and qualifying human resources through graduate degree programs in Energy Resources is essential for the country, mainly because it is a strategic area. The experience to be gained through international collaborations will contribute significantly to the training of students and have an impact on the development of the productive chain of this segment and the nationalization of the technologies employed, as well as laboratory training in teaching and research institutions.

Goal 11 - Implement Multi-user International Reference Laboratory on Energy Resources.
Description - Implement a multi-user international reference laboratory in Energy Resources, using resources requested for project maintenance and academic mobility. The National Institute of Intelligent Networks (INRI), the National Institute of Science and Technology in Distributed Generation (INCT-GD), which were recently implanted, along with the already consolidated Laboratory of Micrometeorology have intensified the international network. One of the main equipments in the process of acquisition is the Real Time Digital Simulator (RTDS). RTDS, a real-time digital simulation system, allows the study of Electrical Power Systems and Power Electronics, providing emulation of a microgrid and various electrical analyses, such as transient electromagnetic phenomena. In addition to being used as a computational simulation platform, this equipment provides real-time responses for hardware-in-the-loop testing applications. Thus, control and protection devices are connected to the RTDS for interactions with simulations in electrical systems and / or equipment. This equipment will be a differential due to its functionalities, being the only one in the Southern Region of Brazil. In addition, this multi-user lab will allow studies that will improve weather forecasts at different time and space scales, giving the energy sector the ability to plan their actions in the short or long term with greater efficiency.

Goal 12 - Disseminate Knowledge about Energy Resources in Society.
Description - Disseminate research and developments in Energy Resources for the benefit of society. The more individuals being impacted and companies using such results or mastering the technology

generated, the greater its diffusion will be. The dimensions for assessing this diffusion may vary according to the technology and may include, for example, geographic reach or entry into new markets. There are several means used to promote dissemination, such as the holding public meetings to present results in various forums, the publication of books and periodicals and the transfer of technology, among others.

Theme 3: Tomorrow's materials and clean technologies

Partner countries - United States; Sweden; Germany; Canada.
Justification - Materials are basic pillars for the development of humanity. The synthesis and characterization of new materials propitiate the development of the technologies of the future and contribute to the improvement of life quality. Understanding mechanisms and processes that turn individual molecules into complex materials and their subsequent application in science and in the community has a wide scope in the different areas of knowledge and is fundamental for innovation and generation of products. Material characterization systems on the macro and nano-particle scales also have an important role in the field of human health and industry, contributing to the development of new drugs and processes that are important for sustainable development and progress. Synthesizing and characterizing materials is a latent theme that involves multi and transdisciplinary actions, with different projects and research groups from basic science, technological and applied health areas. UFSM has been an internationally recognized research center in the area of physical-chemical characterization of organic and inorganic materials and products and for the application of this knowledge in the areas of human health and sustainability. In this sense, this theme focuses on the development and characterization of different materials, processes and products to improve the quality of life. The theme is comprised of three central projects that seek to solve problems based on the millennium development goals, namely: the synthesis of intelligent materials, the application of nanoparticles in human health and the development of clean technologies for sustainable societies.

Goal 1 - Establish new procedures to intensify industrial processes aimed at improving production processes.
Description - This objective aims to develop research to reduce unitary operations, water consumption and energy and effluent generation; employ alternative technologies such as ultrasound, microwave and ultraviolet (UV) for the improvement of processes, materials or products; develop analytical methods for process control; evaluate the potential impacts of processes and products, from a toxicological, nutritional and / or financial point of view.

Goal 2 - Produce and Characterize Macro and Nanoparticulate Materials.
Description - This objective involves the production and characterization of objects at the macro and nano scale, which involve different areas of knowledge. The new materials that we intend to develop include magnetic materials, ferromagnetic nanostructures, spintronic devices, new ceramics with application in dentistry, nanostructured functional materials with applications in devices based on spintronics, polymer nanoparticles with applications in nanomedicine, bioindicators and nanoadsorbent materials. We also aim to study the properties of nanomaterials (graphene, fullerene, carbon nanotubes, etc.) and semiconductor materials using computational simulation based on quantum mechanics. The actions taken in the development of the project will lead to the construction of new international partnerships and the consolidation of existing ones with the aim of becoming a reference in the area of new materials. In addition, the closer relations during the project will allow the attraction of foreign students and researchers to periods of scientific activities in Brazil, increasing the interactions between UFSM and research centers in Europe and the USA. Other internationalization actions involve academic mobility of students and professors abroad, appropriation of knowledge in the area of materials and development of new products, joint PhD programs and improvement in quality and quantity of articles published with international partnerships.

Goal 3 - Developing hydro-environmental models for sustainable ecosystems.
Description - Ecotechnology is an applied science that integrates the fields of Ecology and Technology. It is designed to meet human needs, minimizing environmental impact through knowledge of the structures and processes of ecosystems and society. Consequently, eco-technologies are considered those techniques that minimize damage to ecosystems, promoting comprehensive and sustainable development, with an orientation to minimize or prevent impacts. This objective aims to research the efficiency and necessary adjustments to eco-technologies for its adoption in Brazil, as

well as the training of human resources in the area. In developed countries, the application of these technologies is already widespread and pervasive, thus the exchange of information and its inclusion in the research community of these countries serves to qualify them and raise our research to international levels. This collaboration has occurred over recent years, through isolated research and the participation of Foreign Visitor Professors at UFSM. However, the Capes / PRINT project can boost longer-lasting and institutionalized research among the involved universities (UFSM, UFRGS and UFPA (Brazil), Auburn University (USA) and Lund University (Sweden).

Goal 4 - To implement a joint degree program in the field of Chemistry, Physics (Freie Universität Berlin) and Dentistry (Academic Center for Dentistry Amsterdam (ACTA), The Netherlands).
Description - This objective aims toward medium-term implementation of a joint degree program in the fields of Chemistry, Physics (Freie Universität Berlin) and Dentistry (Academic Center for Dentistry Amsterdam (ACTA) - University of Amsterdam and the University of Amsterdam). The main focus is the development of research on preparation and characterization of different materials and their application in several areas of knowledge. The proposed project to achieve this goal includes researchers from the Graduate Programs in Dental Sciences, Chemistry and Physics. This group already has joint research activities and a history of internationalization demonstrated by different scientific products, agreements and projects financed by the aforementioned universities abroad (CAPES-PROBRAL, CAPES-NUFFIC). Actions planned are described as work missions, mobility activities of foreign professors in Brazil and student mobility activities abroad in order to expand the collaboration of researchers involved and their respective research groups with the foreign institutions.

Goal 5 - Consolidate the Center for Advanced Materials Development (NUDEMA) as a center of excellence for the development and characterization of materials and products.
Description - This objective aims at the consolidation of NUDEMA as a reference center for the development and characterization of materials with wide application in different areas of knowledge and potential in the generation of products. The creation of NUDEMA is part of a series of projects already financed by FINEP, whose main objective is the structural characterization of different materials and their subsequent technological application for human health. The NUDEMA conception represents the interest of several researchers to catalyze multi and interdisciplinary activities, unifying several areas of study related to advanced materials. The advancement of knowledge of the processes of production / manufacturing and properties of materials is still poignant and of fundamental relevance to the quality of life and national sovereignty. This initiative strengthens the availability of existing equipment, adding to the infrastructure and multi-user equipment already implanted with previous financing, and should encourage the availability of new equipment.

Goal 6 - Develop and validate modern analytical methods for the determination of pesticide residues and other relevant contaminants in water and related matrices.
Description - Establishment of multi-residue methods for the determination of pesticides and other relevant contaminants in samples of environmental interest; to contribute to the national effort of generation and reproduction of knowledge in the area of pesticides and contaminants and identification of sources of exposure to these compounds; promote and encourage accreditation, by INMETRO, for the ABNT ISO 17025 standard, for the different types of methods developed under this project.

Goal 7 - Synthesize and characterize new compounds as carriers of biological activity.
Description - The main objective is the development of new organochalcogen compounds, more specifically, compounds containing sulfur, selenium or tellurium and their applications as bioactivity carriers. Organochalcogens have aroused the attention of the scientific community due to the biological applications of molecules containing these atoms. It is possible to evaluate the biological activity of molecules containing chalcogens with similar ones that do not contain these atoms. What makes molecules containing chalcogens promising from a biological standpoint is that the number of drugs containing these atoms is practically restricted to sulfur-containing compounds, and thus drugs containing selenium and tellurium could be a new weapon against a range of diseases that currently face problems in treatment due to resistance. In this way, the main theme focuses on compounds containing chalcogen and, based on the area of experience of participants, there are specific focuses on synthesis of chalcogen-containing compounds, biological assays (antitumor, antimicrobial), molecular nanoprobes and photodynamic therapy. This project seeks a broad and multidisciplinary application of compounds containing chalcogen as carriers of biological activity.

Goal 8 - To expand and consolidate the scientific development and internationalization of research in the areas of Chemistry of Supramolecular Systems and their applications in the understanding of complex materials.
Description - Expand, qualify, improve and internationalize quality scientific and technological research, as well as train human resources in undergraduate and graduate programs, in the NUQUIMHE research group of the Department of Chemistry. This group uses a platform for studies in the field of Chemistry (Chemistry of Supramolecular Systems), aiming to answer some fundamental questions for Science, and in particular Chemistry: what are the steps and processes that lead from the individual molecule to the material? How and why does matter become complex? Or, what is the path taken by the molecule to entities of the highest complexity? In this sense, UFSM research groups have been working on the synthesis of model molecules of neutral organic compounds, metallic complexes, ionic liquids and interleaved molecules (molecular machines) for the study of self-organized supramolecular systems (SS). These systems are mono and multicomponent, such as monocomponent crystals, polymorphs, solvates, cocrystals and mixed systems. The studies aim to understand geometric data, topological data and energetic data of the interactions that keep the molecules aggregated. This has led to an approach that considers the complexity of the SS involved, providing an understanding of the emerging properties of complex systems. One of the main consequences in this type of framework is to highlight the need to expand the scientific method beyond its borders, requiring the inclusion of knowledge from the Human Sciences. To this end, goals have been established to enhance scientific and technological production, improve the quality of scientific production through publication in periodicals with a high impact factor, implement collaboration on scientific projects with researchers from abroad, improve the training of human resources by implementing and increasing the number of sandwich PhD programs at centers of excellence abroad and implement the scientific exchange between our research group and research groups abroad.

Goal 9 - Improve research techniques and methodologies, seeking standards of excellence and training within the international network.
Description - Increase the network between international researchers in the area of synthesis and characterization of materials, products and processes with a view to sustainable development. With this objective, the aim is to increase the visibility and internationalization of the Programs involved, to consolidate international cooperation with foreign research groups in the areas of intensification of processes with alternative energies, as well as formalize bilateral cooperation agreements and diffuse new techniques and advanced methodologies used in international research centers of excellence. To this end, scientific exchange with centers of reference abroad are planned for teachers and students, including study missions abroad, as well as visits from foreign researchers at UFSM, presentation of scientific results at events abroad and establishment of cooperation agreements aiming toward joint degree programs.

Theme 4: Information Society: memory and technologies

Partner countries - Denmark; Italy; Mexico; United States; Colombia; Sweden; Netherlands; Portugal; United Kingdom; Germany; France; Cuba; Chile; Spain; Austria; Argentina.
Justification - The theme is based on three concepts: Information Society, memory and technology. Together, these notions define the general field and the specific dimension of the approach. The concept of Information Society denotes the thematic field and the concepts of memory and technology characterize the specific focuses. As we know, Information Society is a widely recognized concept that designates a progressive unfolding of the technological structuring of all human forms of society. With the development of Information and Communication Technologies, human societies are no longer only fully cemented by technology, but also become societies fully structured by Information Technology. The social link ceases to be fundamentally based on representations and becomes strongly defined by Information Technology. That is, in the contemporary world, economic activity, collective and individual life, organizations and institutions are regulated mainly by the production, registration, management and use of information. Because of this, human populations assume, as a result of an ancient and rapid historical process, the identities resulting from the Information Society. When one approaches the phenomenon of social identity, one is in principle intrinsically dynamic. However, informational societies represent intensification in the social and systemic dynamics, since Information Technology is intrinsically implied as a quantitative and qualitative acceleration. Big Science, Big Data, but also Big

Changes and Big Catastrophes are not contingent phenomena in the Information Society. In this sense, the concepts of memory and technology provide the research subject, in order to restrict the focus on the dynamic dimension of identity of informational societies. We can understand memory as a complex phenomenon in which the operational stratum of a person or device, referring to the capacity to collect, store and retrieve information, is integrated with the collective and cultural level of memory, thus, it is a sufficiently differentiated and cohesive concept that allows an approach of the diverse senses and contexts in which the dynamics of individuals, groups and systems occur in information societies.

Goal 1 - Consolidate the collaboration of professors from the programs involved in this project, into international research networks aiming, above all, to examine issues of a more conceptual nature related to memory.
Description - We will be centralizing efforts in activities fundamental to an effective process of internationalization in the collaboration of professors in the production of knowledge about memory and technologies within the scope of the Information Society focused on sustainable development. We believe that all international collaboration must be reciprocal. In this sense, we plan annual visits of professors to partner institutions and laboratories to establish new thematic projects that provide the maintenance of existing collaborations and new ones in the long term. We aim toward the participation of professors at international meetings with the objective of strengthening interaction with the international academic community in the medium and long term, in addition to the annual participation of international researchers for short- and medium-term visits at our institution, with the objective of establishing and consolidating the lines of research of the programs involved. During the stay of international researchers with recognized knowledge at our institution, courses and lectures will be given in a foreign language, because we want to implant a culture that goes beyond that of only a system of formal evaluation of language learning. We will also offer opportunities and focused courses by the visiting researchers to students of the GPs involved in this project at UFSM. We also aim to bring the teaching community and the schools of the region closer together to discuss the themes proposed in this project in order to implement a dissemination and discussion of the knowledge produced by the group.

Goal 2 - To train future researchers with knowledge and vision for the development of research related to information within the Information Society and its technologies.
Description - We prioritize activities for students and young talents to participate in the internationalization process. The internationalization activities aim to: strengthen the graduate programs involved, developing people with excellence, and generate science, technology and innovation with an impact on our society. Therefore, graduate student mobility among participating universities in short- and medium-term academic missions aims to develop and improve theoretical studies that may help in the conceptual reflection related to information within the scope of the Information Society and, consequently, to increase and consolidate academic-scientific productions. Also, the participation of students in sandwich programs aims to strengthen the network of international collaboration. The participation of postdoctoral students in short and medium-term international missions aims to expand conceptual reflections on information systems within the International Society so that they have a greater impact on the study of contemporary technologies. The participation of students at international meetings to present scientific results originating from international collaboration will also serve for interaction with the international academic community.

Goal 3 - Develop international cooperation projects focused on issues related to the memory within the Information Society and the different technologies.
Description - Development of international cooperation projects focused on issues related to memory within the Information Society and the different technologies used in the production, circulation and dissemination of knowledge to strengthen international academic-scientific relations in the production of new research materials and, consequently, in joint intellectual production.

Goal 4 - Develop international cooperation projects focused on issues related to information systems within the Information Society and the different technologies.
Description - Development of international cooperation projects focused on issues related to information systems within the Information Society and the different technologies used in the production, circulation and dissemination of knowledge to strengthen international academic-scientific relations in the production of new research materials and, consequently, in joint intellectual production.

Goal 5 - Reflecting about the University of the future, from our point of view, is to bring to the surface the place of the Information Society in terms of what it potentializes as a technological advance.
Description - With a deeper understanding of the place of the Information Society in terms of what it potentializes as a technological advance, it will be possible to more forcefully intervene both its techniques and in its referential system. In addition, research suggests that the technologies linked to information systems potentialize the writing of a history and may bring about advances as important and profound as those resulting from the industrial revolution. In this context, our international cooperation project will allow the creation of access to new technologies, including those called traditional ones, and qualify the next generation of multidisciplinary researchers, including fundamental aspects of their historical diversity and of ethics in the perspective of otherness.

Goal 6 - To consolidate the participation of professors and programs involved in this project in international research networks aiming, above all, to examine more conceptual issues related to information.
Description - We will be centralizing internationalization efforts on the participation of professors in the production of knowledge related to information, within the scope of the Information Society, focusing on issues related to a society that is globalized, in part, by virtue of a social organization structured in digital networks and whose transnational management processes rely heavily on this technology. We believe that all international collaboration must be reciprocal. In this sense, we plan annual visits of professors to partner institutions and laboratories to establish new thematic projects that provide the maintenance of existing collaborations and new ones in the long term. We aim toward the participation of professors at international meetings with the objective of strengthening interaction with the international academic community in the medium and long term, in addition to the annual participation of international researchers for short- and medium-term visits at our institution, with the objective of establishing and consolidating the lines of research of the programs involved. During the stay of international researchers with recognized knowledge at our institution, courses and lectures will be given in a foreign language, because we want to implant a culture that goes beyond that of only a system of formal evaluation of language learning. We will also offer opportunities and focused courses by the visiting researchers to students of the GPs involved in this project at UFSM. We also aim to bring the teaching community and the schools of the region closer together to discuss the themes proposed in this project in order to implement a dissemination and discussion of the knowledge produced by the group.

Goal 7 - To train future researchers with knowledge and vision for the development of research on the concept of memory in contemporaneity.
Description - We prioritize activities for students and young talents to participate in the internationalization process. The internationalization activities aim to: strengthen the graduate programs involved, developing people with excellence, and generate science, technology and innovation with an impact on our society. Therefore, graduate student mobility among participating universities in short- and medium-term academic missions aims to develop and improve theoretical studies that may help in the conceptual reflection related to memory and technologies and, consequently, to increase and consolidate academic-scientific productions. Also, the participation of students in sandwich programs aims to strengthen the network of international collaboration. The participation of postdoctoral students in short and medium-term international missions aims to expand conceptual reflections on memory and society within the scope of the International Society so that they have a greater impact on the study of contemporary technologies. The participation of students at international meetings to present scientific results originating from international collaboration will also serve for interaction with the international academic community.

Goal 8 - Develop, implement and share new knowledge and methodologies with a focus on issues of memory within the scope of the Information Society and the different technologies employed.
Description - Explore new knowledge in the areas contemplated in this project with the aim of proposing topics of interest to the participating researchers. In this sense, the integration and interaction of different areas and fields of knowledge, such as agronomy, administration, visual arts, social communication, forestry, philosophy, geography, linguistics and literature is fundamental to overcome the barrier that separates these areas and allow the knowledge / tools / approaches generated in one area to accelerate the advancement of the others and result in more efficient responses for the promotion of a more just and humane society. Thus, through interdisciplinary articulation, these areas will be converging around the axis of social and strategic relevance, encompassing fundamental themes and problems about the conditions and perspectives of a more

dignified human life in which people and traditions form themselves, interacting with their identities, preserving heritages and transforming their future with their knowledge, their work and their art.

POSTGRADUATE PROGRAMS LINKED TO THIS PROPOSAL

Theme 1: One Health

Postgraduate Program 1 – Education in Sciences Graduate Program: Chemistry of Life and Health (UFRG-UFSM-FURG).
Capes evaluation (2017 evaluation grade) – 5.
Justification – The reason to include the Education in Sciences Graduate Program: Chemistry of Life and Health in the proposal is the transdisciplinary effort of its members. The topic to be addressed is the promotion of toxicological safety and health, focusing on sustainable attitudes. All areas of this proposal (Biochemistry, Pharmacology, Pharmaceutical Sciences, Arts, and Computation) will contribute creating this new form of teaching. Modern science has built much knowledge in disciplinary areas. We can attribute a great part of the development of capitalist society to the efforts of speciality areas by scientists, researchers, artists, and scholars. Thus, from interdisciplinary practices emerge transdisciplinary perspectives, and from the blend of specialized knowledge new fields of knowledge are created, seeking the pluralization of points of view, theories, and study proposals. Activities open to the public and in schools of the region have already taken place, the objective now is to coordinate these actions in a larger goal of internationalization.

Postgraduate Program 2 – Veterinary Medicine.
Capes evaluation (2017 evaluation grade) - 7.
Justification – The Graduate Program (GP) in Veterinary Medicine was evaluated by CAPES for the second consecutive time with score 7. This shows the excellence in quality of teaching staff, in training of post-graduate students and in relevant publications in their respective areas. The program seeks to form human resources aimed at the development of Brazilian science and technology. The Program has consolidated international interactions for more than 20 years. These collaborative actions in international networks expand the international insertion and the training of young researchers in the fields of development of recombinant vector vaccines against strategically important viral diseases and applied biotechnologies for animal reproduction, development, health, and welfare.

Postgraduate Program 3 – Visual Arts.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The GP in Visual Arts is part of this program because of its integrating nature in the scope of Art, Science, and Technology. The Visual Arts researchers participating of this proposal have extensive experience in this area and will contribute to the popularization of science activities and dissemination of the knowledge generated within this project. These researchers will approach the theme of this proposal in exhibitions, curatorships, and art shows in a transdisciplinary manner, proposing activities that provide the interaction between the scientific and artistic field.

Postgraduate Program 4 – Food Science and Technology.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The international participation of the GP in Food Science and Technology has increased in recent years with international cooperation, giving rise to published papers (A1 / A2), chapters and international books. The average performance of the Program in the previous quadrennium resulted in a score of 4 (CAPES). However, in the last year levels compatible to a score of 5 were reached, with a clear prospect of increasing the score in the next four-year period. In this sense, it is essential for the Program to maintain its international growth. The international cooperation of the Program is related to bioactive compounds and food quality and their relation to health maintenance, including identification / quantification of bioactive compounds in food / agro-food waste, elucidation of their role in reducing the risk of chronic diseases, development of extractive processes for these compounds and functional foods enriched in these compounds, monitoring of food contamination with pesticides and microorganisms.

Postgraduate Program 5 – Pharmacology.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Pharmacology reached score 5 (CAPES) in the last evaluated quadrennium. This Program is part of the present proposal due to its areas of action and researchers.

Some researchers of this Program have a high degree of internationalization linked to the themes neuropharmacology, neurochemistry, inflammation, nutraceutical and physiology of aquatic animals. While others researchers have focused on medical clinic in order to understand the main etiopathogenic and epidemiological aspects of metabolic diseases. The themes of this Program are closely related to human health and animal welfare, fitting perfectly with the concept of One Health.

Postgraduate Program 6 – Biological Sciences: Toxicological Biochemistry.
Capes evaluation (2017 evaluation grade) - 6.
Justification – The GP in Biological Sciences: Toxicological Biochemistry recently reached a score of 6, demonstrating the excellence of its teachers, the postgraduate students' academic work and publications, as well as its consolidated international performance, which is a priority. Many of its researchers have a high degree of internationalization attested by joint publications and participation in cooperation agreements and research networks. The program has a focus on Toxicological Biochemistry in order to understand the toxicology and pharmacology of organic and natural compounds with the purpose of discovering molecules that represent a therapeutic alternative for diseases, using alternative models (*C. elegan*s and yeasts) or conventional ones (vertebrates). The study of the mechanisms involved in the genesis and progression of chronic and degenerative diseases in human and animal models, with the aim of pointing out the use of new molecules as therapeutic agents as well as the molecular aspects related to the toxicology of metals and chemical agents in vertebrates and non–vertebrates, are topics of interest. The knowledge / tools / approaches generated in this area are intended to be used to collaborate in the obtainment of more efficient responses for the promotion of public health. Thus, the GP Biochemical Toxicology will contribute to the different areas that make up this theme converging around the concept of One Health, which is the most rational and effective way to address the problems faced by the developing world.

Postgraduate Program 7 – Pharmaceutical Sciences.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The reason for the inclusion of the GP in Pharmaceutical Sciences in this proposal is based on its area of action and on the profile of its researchers. The performance of the GP in Pharmaceutical Sciences in the previous quadrennium resulted in the increase of its grade to 5. The projects developed in this GP aim at both the development of nanostructured formulations for drug release and the study of the toxicological potential of these formulations. New smart molecules are being created and tested for future application in promoting and maintaining health. In addressing this issue, this GP will contribute to the application of the One Health concept in the solving of problems faced by the developing world.

Theme 2: Sustainability and intelligent attitudes

Postgraduate Program 1 – Forestry Engineering.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Forest Engineering contributes on the rational use of natural ecosystems, meeting the criteria of sustainability, recovery and reintegration of areas for the processes of environmental conservation and production. The disordered process of land occupation has culminated in the degradation and marginalization of areas from production processes. Degraded areas, in the process of natural or assisted recovery, have been considered as impediments to economic activity, being marginalized. As a rescue strategy, conservation through use can be achieved with the introduction of forest management techniques that aim toward the protection of soil and water; as well as improving the quality of vegetation, and the ecosystem as a whole. The formation and management of trees of appropriate quality and size allows economic gain, does not degrade the ecosystem, preserves the landowners' interest, and satisfies society with the maintenance of environmental benefits.

Postgraduate Program 2 – Agricultural Engineering.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The GP in Agricultural Engineering is focused on the growth and qualification of its Teachers and Students in an international level, aiming at innovation and sustainability. The Innovative, intensive and sustainable Agriculture, is more than a project of research groups or institutions: it is a policy of international bodies to promote science and human development, viewing the intensification and quality of the production of healthy food and minimizing postharvest losses, reducing the hunger of a population that will reach 10 billion people by the year 2050, In order to train

high-level human resources aimed at the scientific and technological development of the agricultural sector and of agribusiness, supporting sustainable development, the cooperation with renowned international institutions and researchers is crucial.

Postgraduate Program 3 – Agronomy.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Agronomy is endowed with a qualified group of teachers and students with renowned internationalization. Given Brazil's strength in the global agricultural sector, it is necessary to invest in strategies aimed at sustainable intensification, seeking to maximize efficiency in the use of resources and in this sense to guarantee food security and sovereignty for a growing world population. As a result, the Program is focused on the internationalization of its cooperation networks in order to qualify education, generate knowledge and convert it into technological innovation. In this way, internationalization is seen as strategic for the group to acquire new capacities and contribute to solving the great challenges of food production in an intensive and sustainable way.

Postgraduate Program 4 – Soil Science.
Capes evaluation (2017 evaluation grade) - 6.
Justification – The GP in Soil Science has been consolidating a qualified group of researchers, culminating in 2017 with the achievement of a CAPES score 6. Internationalization is one of the strengths of the group, which has activities with 33 institutions based in 16 countries. The group seeks to expand internationalization, aiming to qualify teaching, research and technological development. Brazil is one of the world leaders in agriculture, but urgently needs to develop more efficient and sustainable technologies in this sector. In isolation, the country will find it difficult to achieve this goal in the short and medium term, given the high complexity of the problem. In this regard, internationalization will play a strategic role. Professors-researchers from the most renowned research institutions in the world will exchange and integrate knowledge in the search for technologies that allow the production of more food with better quality and less degradation of the natural environment.

Postgraduate Program 5 – Rural Extension.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The GP in Rural Extension has continuously invested in internationalization, making partnerships and agreements with international educational institutions. The most recent agreements are: Universid Nacional de Rosário, Écoledes Hautes Études en Sciences Sociales, Institut National de la Recherche Agronomique, Universidad de Sevilha, Univesidad de Lheida, Instituto Nacional de Tecnologia Agropecuária/Argentina, Universidad Autônoma del Estado de México and the Centro de Investigación y Tecnología Agroalimentaria de Aragon. These agreements have also supported the post-doctoral internships of faculty, who have had an average of one annual leave, in addition to about 11 sandwich PhD students in recent years, especially at European universities. In this way, a set of inter-institutional practices and agreements with several international bodies, entities and institutions has been established, which shows the continuous opening of opportunities for students as well as for teachers who are part of this Program.

Postgraduate Program 6 – Meteorology.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The GP in Meteorology has participated in important studies involving alternative energies and weather and climate patterns. In this regard, techniques of remote sensing, computational modeling and mainly observational data from field experiments have been employed. The Micrometeorology group has been involved in several actions involving the generation of energy (hydroelectric, thermoelectric, wind) by studying the movements and the scales of transport occurring in the atmosphere near the surface of the Earth. The understanding of these mechanisms is directly utilized in the context of environmental problems caused by the generation of energy, and in aspects related to the sustainability of ecosystems. This set of activities, which has generated important results and applications in this area, has brought the group important international recognition.

Postgraduate Program 7 – Animal Biodiversity.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The project "Sustainable Ecosystems" represents a proposal of multidisciplinary work involving three graduate programs. The participation of the GP Animal Biodiversity aims to support integrated knowledge between fauna and the environment, represented by different landscapes, such as forests, open field pasture areas, and even coastal environments. The Program has qualified

teachers in the research areas needed for this purpose, including taxonomists of various invertebrate and vertebrate groups, ecologists, geneticists, biogeographers, conservation biologists and evolutionary biologists. The internationalization of the Program will greatly strengthen its capabilities, not only to achieve the objectives proposed in this project, but to permanently maintain an educational and research level of excellence and international relevance.

Postgraduate Program 8 – Animal Science.
Capes evaluation (2017 evaluation grade) - 4.
Justification – Since the beginning of its activities, the GP in Animal Science has as one of its main objectives the formation of human resources and production of knowledge in animal production based on pasture systems, both cultivated and, especially, natural fields (Bioma Pampa). Different from past decades, where productivity was the main goal, animal production nowadays has to take into account environmental and socioeconomic aspects, which are of global interest and reach. With the prospect of expanding cooperation activities in this area, the Program has included in its faculty a Visiting Professor who has extensive experience and intense international activity, with high potential to contribute to the internationalization of the program. One of the first actions, for example, was to bring to Program the coordination of the LIFLOD network (Livestock Farming & Local Development, www.liflod.org). The LIFLOD network (Figure below) involves multidisciplinary and shared research aimed at producing and exchanging knowledge, including conducting comparative analyses of different realities in various regions of the world.

Postgraduate Program 9 – Electric Engineering.
Capes evaluation (2017 evaluation grade) - 6.
Justification – The GP in Electric Engineering has a strong performance in the Energy Resources area, with Energy Processing being the area of concentration of the program, involving direct action of its research groups: CEESP - Center of Excellence in Energy and Power Systems, GEPOC - Power and Control Electronics Group, and GEDRE - Intelligence in Lighting. The program has conducted research and developments of international reference in the themes of renewable energy sources (hydropower, solar photovoltaic, wind, geothermal), transmission, conversion, distribution and use of electric energy, exploring the context of Intelligent Electrical Networks (smart grid) and the use of new technologies (distributed generation, energy storage, electric vehicles).

Theme 3: Tomorrow's materials and clean technologies

Postgraduate Program 1 – Dental Sciences.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The research group linked to the GP in Dental Sciences develops activities related to the characterization of materials, which is a latent theme and enables procedures in teaching and research activities at the national and international level. The Program participates in projects associated with the GPs of chemistry and physics, especially the large financing projects such as CTINFRA (2011), for the creation of a laboratory of spectroscopy at UFSM. With this financial aid, equipments were acquired such as RAMAN, IRFT, UV-vis, photon correlation, and a high performance computational module for the determination of structural and electronic properties with theoretical support of quantum mechanics (ab initio and DFT). The Program also participates in the NUDEMA project, which raised approximately R$ 1.5 million for the construction of a multi-user physical structure, in several areas related to the characterization of materials. In addition, it is internationally recognized in the line of epidemiology research and is linked to the proposal to analyze materials and their applications in the community.

Postgraduate Program 2 – Communication.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Communication brings together research projects that have in common the study of the incidence of the media sphere in the conformation of contemporary identities, with an emphasis on the construction of representations and meanings. The Program will contribute to this project with semiotic theory of complexity in the scope of the semiotic concepts in the analysis of signals obtained in the field of exact sciences. Self-organization in the Chemistry of Supramolecular Systems involves concepts of molecular recognition, that is, there are interactions directed towards the complementarity between molecules, for example between a guest molecule and a host molecule. Therefore, the molecules carry signals that define a pattern to be followed in order to understand how the supramolecular structures are constructed. Thus, the researchers in this area will help to explore

these processes, interpreting what is printed in each molecular structure (how this information will be used by nature in the construction of supramolecular structures) and the scientific dissemination of results.

Postgraduate Program 3 – Chemistry.
Capes evaluation (2017 evaluation grade) - 7.
Justification – The Graduate Program in Chemistry has a very significant history of internationalization, based on already developed projects. Among these, we highlight projects to attract foreign teachers to work in the program (PROBRAL and PVE programs) and students from abroad for internships at UFSM (PROBRAL program) and also for full doctorates (TWAS program). In addition, the Program has a CAPES 7 score, which places it within the level of excellence at international level. This score accredits the Program as meeting and fitting the needs of the Capes PrInt program. In addition, its existing infrastructure are consistent with the development of the activities described to be carried out and will be complemented with the participation of institutions from Canada (University of Montreal), Portugal (University of Aveiro), Germany (Freie Universität Berlin) and the United States.

Postgraduate Program 4 – Philosophy.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Philosophy is one of the oldest programs in Brazil in the area of Philosophy, standing out today for the plurality of its research and course offerings, as well as the systematic approach of classic and current philosophical themes and problems. In the last four years the program has obtained a CAPES score of 5. Its research lines include modern phenomenology and hermeneutics, which will provide solid theoretical bases for our study of Chemistry of Supramolecular Systems. A phenomenological approach to the relations between theoretical reason and practical reason, encompassing the unfolding of the phenomenological movement on epistemological logical problems, will allow the researchers to develop within the scientific method the phenomenological reduction necessary to understand the phenomena. In addition, modern hermeneutics will allow researchers in the field of Chemistry of Supramolecular Systems to expand the scientific method to a complex interpretation of the phenomena.

Postgraduate Program 5 – Physics.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The GP in Physics acts in the development of researchers to work at universities and research institutes, as well as in the development of new technologies. In addition, it empowers higher education faculty, complementing the undergraduate training as well as familiarizing this target population with the research process in Physics. It aims to train professionals in advanced experimental techniques for research and development activities in industries related to the electro-electronics, metallurgic, aerospace and computer sectors, among others.

Theme 4: Informational society: memory and technologies

Postgraduate Program 1 – Administration.
Capes evaluation (2017 evaluation grade) - 4.
Justification – Problematizing and understanding the relations of production and consumption in the informational society are among the research interests of the Program, whose guidelines include studies related to intra and inter-organizational aspects, focused on the management processes of organizations and their relations to the environment. In this context, the study of transactional processes of management through information technologies and networks has been an emerging theme, counting on international research partnerships. Through this project, the Program intends to explore the issue in the context of the agri-food system, seeking to analyze issues inherent in the restructuring of rural and urban relations, specifically in the tension between the Modern Agro-Food System, regulated by large global actors and organized in large food chains, and an Alternative Agro-Food System, which recaptures the rural space as an active and transforming force in the agri-food field.

Postgraduate Program 2 – Agronomy.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The GP in Agronomy presents a history of investigation into problems related to agricultural production, which connect the cultural, social and ecological memory of farmers to the

technologies used in agriculture over time. In a contemporary scenario of concern about the production of food, energy and fiber in the face of global climate change, our research has been increasingly directed towards the search for technological solutions that enable sustainable development. The intellectual production of our researchers reflects this direction. The Program has a history of internationalization in the research of issues related to memory and technologies, especially those related to sustainable agricultural production, which is carried out through collaborations with researchers and institutions from Latin America, the United States and Europe.

Postgraduate Program 3 – Philosophy.
Capes evaluation (2017 evaluation grade) - 5 .
Justification – The GP in Philosophy has a methodologically solid and conceptually relevant history of approach to the philosophical issues that concern the theory of memory and information. We find, in the outcomes already reached by our researchers, a range of results from formal models related to reasoning and persuasion - valuable for understanding informational interaction - to evaluations of moral issues related to forgetfulness and their dimension of failure to recognize the value of another person. The Program also promotes investigations into the nature of memory, the role of memory between sources of knowledge, and the influence of emotions on both the knowledge and moral evaluation of the past. Our researchers already have a history of internationalization in addressing issues related to the information society, memory and technologies, which is manifested in the collaborations with researchers and institutions from Latin America, the United States and Europe.

Postgraduate Program 4 – Visual Arts.
Capes evaluation (2017 evaluation grade) - 4.
Justification – The internationalization actions already in place and practiced by faculty members of the GP in Visual Arts will be consolidated and gain relevance with their inclusion in the project Information Society: Memory and Technologies. We live in a world saturated with multiple images in which the technology of image reproduction has reshaped the scale of visual production. The Program has developed research projects to preserve the tradition of engraving and experimentation with artists' books. The historical legacy of engraving is remarkable, as it is one of the expressive means most strongly associated with the reproduction of documents and plastic works, relevant in the understanding of how art and technology have developed in continuous codependency and hybridization. This research has promoted reflections on the legacy and wealth of knowledge accessible today, historically obtained through books, but now available in a myriad of platforms. In the agreement established between Universitat Politécnica de València and UFSM we have focused on the relations between art and ecology in interdisciplinary groups and have succeeded in deepening the reflection on the deterioration of the planet as well as on the political role of artists in raising awareness for environmental problems.

Postgraduate Program 4 – Communication.
Capes evaluation (2017 evaluation grade) - 5.
Justification –The GP in Communication considers interdisciplinarity of the goals to be of the utmost importance, allowing dialog about a reality that is not compartmentalized. Contemporary social organization in the era of information is built and globalized around networks, activated by digitally processed information and communication technologies. Means of communication are not just means of organization and generation of data, but also technological resources that mediate and constitute contemporary culture. Its techniques are a constitutive dimension of cultural practices and technical innovations are connected to transformations in social experience and perception. In this perspective, the Program participates through the investigation into processes of production, circulation and consumption of representations generated and mediated by information and communication media and on the theme of memory, which traverses the entire cultural circuit.

Postgraduate Program 4 – Forest Engineering.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The mission of the GP in Forest Engineering is to solve problems through applied research into the rational use of forests and the natural environment for the social, economic and environmental well-being of society. The sustainable use of forests and their wood and non-wood resources, as well as ecosystem services, which integrate cultural and ecological memory of human populations, has been a research interest of the Program. Its researchers have a history of internationalization on issues related to memory and technologies, manifested through collaborations with researchers and institutions from Latin America, the United States and Africa.

Postgraduate Program 5 – Language and Literature.
Capes evaluation (2017 evaluation grade) - 5.
Justification – Since 2015, the GP in Language and Literature has stood out in the composition of collections and Documentary Bases, inaugurating through the School of High Studies in General Semiology (EAE CAPES 2016 Announcement) a Documentation and Memory Center with three Documentary Funds of important researchers for the history of teaching in the south of the country, as well as an artistic collection dedicated to the work of the English researcher Michael Phillips, who has recreated contemporary William Blake's illuminated books, (re) producing copper print matrices and printed text and image on linen paper. The results already reached range from models linked to history, discursive and aesthetic reflection - valuable for understanding and dissemination in an informational system - to evaluation of cultural issues related to cultural, discursive and literary heritage. From this perspective, the guiding projects, here involved, have presented important reflections on documentary backgrounds of artists and scholars, as well as interesting reflections in the fields of disciplinary and aesthetic knowledge. Researchers also have a history of internationalization in addressing issues related to cultural heritage, digital and physical archives, which is manifested in the exchanges with institutions and collaborations with researchers from Latin America and Europe.

Postgraduate Program 6 – Geography.
Capes evaluation (2017 evaluation grade) - 5.
Justification – The Information Society registers its transformations in space and the evidence is imprinted on the dynamics of landscapes. It constitutes itself in the visible aspect of socioeconomic conditions which modulate ways of producing, working and living of human groups, which are a source and bridge to the territorial development under natural and cultural perspectives. By understanding the landscape it is possible to comprehend memory, heritage and its techniques, which together surpass the compartmentalized treatment between natural and cultural, allowing the recognition of territorial practices interconnected with the material production and the ways and dynamics of nature. The meaning acquired by the landscapes in the Information Society and the way this society thinks and produces its dynamics, constituting the memory of nature and of working techniques and relations in different space and time scales, are the inquiries that form the basis for the investigations conducted by the Graduate Program in Geography, in partnership with researchers and national and international institutions.

Activities Linked to the Themes

Theme 1: One Health
Goal 1: Study the mechanisms of reproductive functions and their interactions with organisms and develop technologies to improve food production and quality for the well-being of people and animals.

Activity 1 - Training for development of biotechnologies applied to understanding reproductive disturbances and their interactions with organisms.
Start date - 01/2019 **End date - 07/2022**
Description – Seek to improve innovative reproductive biotechnologies, such as DNA marker-assisted selection, reproductive cloning by nuclear transfer and transgenics. Recent advances in knowledge on genomics, molecular biology and bioinformatics have allowed the creation of technologies for specific, simple and efficient genomic editing. These activities aims to develop research at UFSM, strengthen active agreements with McGill University (Canada), Montreal University (Canada), Imperial College London (United Kingdom) and Colorado State University (U.S.).

Activity 1 - Indicator 1

Type – Qualitative
Indicator - Impact factor of scientific publications
Current situation – Good
Goal for the 2nd year – Good
Final goal - Great

Activity 1 - Indicator 2

Type – Quantitative

Indicator - Number of PhDs with international experience
Current situation – 2
Goal for the 2nd year – 3
Final goal - 5

Activity 2 - Train faculty abroad in the area of biotechnology applied to understanding reproductive disturbances and their interactions with organisms.
Start date - 01/2019 **End date - 07/2022**
Description – Post-doctorate programs abroad (visiting professor abroad), work missions for technical visits/training/seminars and technical-practical courses at foreign institutions. These activities aim to develop research at UFSM, strengthen active agreements with McGill University (Canada), Montreal University (Canada), Imperial College London (United Kingdom) and Colorado State University (U.S.).

Activity 2 - Indicator 1
Type – Quantitative
Indicator - Qualified professors
Current situation – 3
Goal for the 2nd year – 4
Final goal - 6

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Participation of professors at events abroad (per year)
Current situation – 1
Goal for the 2nd year – 2
Final goal – 3

Theme 1: One Health
Goal 2: Prepare researchers with knowledge and vision to develop recombinant vaccines against viral diseases and applied biotechnology techniques for animal well-being and health.

Activity 1 - Student training and sandwich PhD programs at international laboratories.
Start date - 01/2019 **End date - 07/2022**
Description – Promote graduate student mobility in international research networks and attract young talents in research to Brazil to develop recombinant vaccines against viral diseases and applied biotechnology techniques for animal well-being and health. These activities aim to expand student mobility with partner universities, especially McGill University (Canada), Montreal University (Canada), Imperial College London (United Kingdom), Colorado State University (U.S.), South Dakota State University (U.S.) and University of Nebraska/Lincoln (U.S.), as well as creating new partnerships with centers of excellence. In the last several years, the Graduate Program (GP) in Veterinary Medicine has sent an average of 5 to 6 PhD sandwich students per year.

Activity 1 - Indicator 1

Type – Qualitative
Indicator - Student participation in international publications
Current situation – Good
Goal for the 2nd year – Great
Final goal - Great

Activity 1 - Indicator 2
Type – Quantitative
Indicator - Number of post-doctoral students with experience abroad
Current situation – 2
Goal for the 2nd year – 4
Final goal – 6

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Number of thesis defenses from students with experience abroad
Current situation – 5
Goal for the 2nd year – 7
Final goal - 10

Activity 2 - Attract foreign students to study at UFSM in the development of vaccines against viral diseases and applied biotechnology techniques for animal well-being and health.
Start date - 01/2019 **End date - 07/2022**
Description – Increase international visibility of the GP in Veterinary Medicine to attract foreign students within the context of active partnerships. This includes publicity of the program abroad, training faculty to offer classes in English, regular course offerings in English, reception of graduate students, with financing from the countries of origin or through grants, such as PEC-PG/CNPq. Over the last four years, the GP in Veterinary Medicine received one master's student from Peru, one PhD student from Tunisia and in 2017, two master's students, from Nicaragua and Paraguay and one PhD student from Paraguay.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of foreign students received
Current situation – 2
Goal for the 2nd year – 4
Final goal – 6

Activity 2 - Indicator 2

Type – Qualitative
Indicator - Publicity of the GP in Veterinary Medicine abroad
Current situation – Good
Goal for the 2nd year – Good
Final goal - Great

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Qualified professors to give courses in English
Current situation – 4
Goal for the 2nd year – 6
Final goal - 8

Activity 2 – Indicator 4

Type – Quantitative
Indicator - Course offerings in English
Current situation – 1
Goal for the 2nd year – 2
Final goal – 3

Theme 1: One Health
Goal 3: Consolidate participation of faculty in international networks for development of vaccines against viral diseases of strategic importance and applied biotechnology techniques for animal well-being and health.

Activity 1 - Faculty mobility – participation in technical visits at international laboratories and in international congresses
Start date - 01/2019 **End date - 07/2022**
Description – Faculty participation in work missions and international congresses in North America and Europe to discuss scientific results from international collaboration. Participation in technical visits in North America and Europe to consolidate international collaborations, research lines and establish

new projects, promote faculty mobility and attract foreign researchers to visit UFSM. These activities seek to strengthen partnerships that have been established for over ten years with McGill University (Canada), Montreal University (Canada), Imperial College London (United Kingdom) and Colorado State University (U.S.) in the area of animal reproduction and South Dakota State University (U.S.) and University of Nebraska/Lincoln (U.S.) in the area of recombinant vaccines against viral diseases. These partnerships have resulted in approximately 4 technical visits per year to foreign laboratories, which have been scheduled to coincide with participation at international congresses.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Participation of professors at international events and technical visits
Current situation – 4
Goal for the 2nd year – 6
Final goal – 8

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Modernization of research lines
Current situation – Good
Goal for the 2nd year – Great
Final goal - Great

Activity 2 - Develop projects in cooperation with foreign partners for vaccines against viral diseases and applied biotechnology techniques for animal well-being and health.
Start date - 01/2019 **End date - 07/2022**
Description – Establish cooperation agreements with foreign research groups to focus on the development of recombinant vaccines against viral diseases and applied biotechnology techniques for animal well-being and health. Increase joint publications with partners in these areas. The GP in Veterinary Medicine is already highly active, with partners such as McGill University (Canada), Montreal University (Canada), Imperial College London (United Kingdom), Colorado State University (U.S.), South Dakota State University (U.S.) and University of Nebraska/Lincoln (U.S.). One of the most productive partnerships is with McGill University (Canada), which has resulted in the publication of 22 scientific articles and mobility of 7 UFSM graduate students at McGill and 4 McGill students at UFSM, as well as one McGill faculty member who came to UFSM as a visiting professor (60 to 90 days/year during 4 years). The other partnerships have resulted in several articles (over 20% of the publications of the GP in Veterinary Medicine are the result of international collaborations), the development of students and two patent requests.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Presentation of joint international research at events
Current situation – 6
Goal for the 2nd year – 9
Final goal – 12

Activity 2 - Indicator 2

Type – Quantitative
Indicator - International cooperation agreements for research projects
Current situation – 2
Goal for the 2nd year – 3
Final goal - 4

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Books or book chapters published with foreign co-authors

Current situation – 4
Goal for the 2nd year – 5
Final goal - 6

Activity 2 - Indicator 4

Type – Quantitative
Indicator - Articles published with foreign co-authors
Current situation – 20
Goal for the 2nd year – 26
Final goal - 30

Activity 3 - Attract foreign researchers to act at UFSM in the area of recombinant vaccines against viral diseases and applied biotechnology techniques for animal well-being and health.
Start date - 01/2019 **End date - 07/2022**
Description – Bring foreign visiting professors to participate in teaching and research activities at UFSM in the area of recombinant vaccines against viral diseases and applied biotechnology techniques for animal well-being and health. This includes special and regular courses, lectures and discussion of results. Currently, the GP in Veterinary Medicine has one visiting professor (using UFSM resources) with experience abroad (Kalyne Bertolin), who obtained master's and PhD degrees at the University of Montreal (Canada). In addition, two foreign professors are accredited faculty of the GP in Veterinary Medicine, Dr. Vilceu Brodignon (McGill University, Canada), as a collaborator, and Dr. Fernando Osório (University of Nebraska, U.S.), as visiting professor. With funding from PrInt, the program aims to increase the number of visiting professors and other international activities.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Number of foreign professors received
Current situation – 1
Goal for the 2nd year – 2
Final goal – 4

Theme 1: One Health
Goal 4: Consolidate and expand faculty participation in international networks in the areas of nutritional and pharmacological strategies and sustainable attitudes to promote health
Activity 1 - Faculty mobility – participation in technical visits at international laboratories and international
Start date - 01/2019 **End date - 07/2022**
Description – Faculty participation in work missions and international congresses in North America and Europe to discuss scientific results from international collaboration. Participation in technical visits in North America and Europe to consolidate international collaborations, research lines and establish new projects, promote faculty mobility and attract foreign researchers to visit UFSM. These activities seek to strengthen partnerships that have been established with Keele University (England), the University of British Columbia (Canada), ICMAN – CSIC | Instituto de Ciencias Marinas de Andalucía (Spain), the Universidad de León (Spain), the Universidad Autónoma de México (Mexico), Albert Einstein College of Medicine (U.S.), the Universitá degli Studi di Firenze (Italy) and UCLA University (U.S.) in the areas of pharmacology and toxicological biochemistry, as well partnerships in the area of food and nutrition with Università Degli Studi Di Torino, (Italy), Universidad de Granada (Spain), Centro Tecnológico de La Carne (Spain), Universidad Autónoma de Querétaro (Mexico), Ohio State University (U.S.), Danmarks Tekniske Universitet (Denmark), Technische Universitat Munchen (Germany). These partnerships have resulted in approximately 4 technical visits per year to foreign laboratories, which have been scheduled to coincide with participation at international congresses.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of professors participating at international events
Current situation – 4

Goal for the 2nd year – 6
Final goal - 8

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Modernization of research lines
Current situation – Good
Goal for the 2nd year – Very good
Final goal - Very good

Activity 2 - Develop projects in cooperation with qualified foreign partners to create and share new knowledge and methods and stimulate transdisciplinarity.
Start date - 01/2019 **End date - 07/2022**
Description – Establish cooperation agreements with foreign research groups in the area of bioactive compounds, food quality, intelligent molecules and sustainable attitudes for health promotion and increase joint publications. Activities will include special and regular courses, lectures, discussion of joint results, workshops and exhibitions. The group aims to create, discuss and articulate transdisciplinary knowledges, striving toward the enhanced future of the graduate programs. The GP in Toxicological Biochemistry is already fully active in the international scientific community, with agreements established with Keele University (England), the University of British Columbia (Canada), ICMAN – CSIC | Instituto de Ciencias Marinas de Andalucía (Spain), the Universidad de León (Spain), the Universidad Autónoma de México (Mexico), Albert Einstein College of Medicine (U.S.), the Universitá degli Studi di Firenze (Italy) and UCLA University (U.S.), among others. These agreements have resulted in productive exchange of experiences and joint research articles. In addition, four professors carried out Senior post-doctorate programs abroad in 2017, at UCLA University (U.S.), Albert Einstein College of Medicine (U.S.) and Universidad de León (Spain). Around ten graduate students, per year, participate in PhD sandwich programs.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - International cooperation agreements for research projects
Current situation – 5
Goal for the 2nd year – 7
Final goal - 10

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Presentation of joint international research at events
Current situation – 6
Goal for the 2nd year – 9
Final goal – 12

Activity 2 - Indicator 3
Type – Quantitative
Indicator - Articles published with foreign co-authors
Current situation – 30
Goal for the 2nd year – 35
Final goal – 40

Activity 2 - Indicator 4

Type – Quantitative
Indicator - Books or book chapters published with foreign co-authors
Current situation – 3
Goal for the 2nd year – 5
Final goal – 7

Activity 3 - Attract foreign researchers to act at UFSM in the area of nutritional and pharmacological strategies and sustainable attitudes to promote health.
Start date - 01/2019 **End date - 07/2022**
Description – Bring foreign visiting professors to participate in teaching and research activities at UFSM in the area of nutritional and pharmacological strategies and sustainable attitudes to promote health. This includes special and regular courses, lectures and discussion of results. Transdisciplinary events will be promoted at UFSM with foreign participants, aiming to integrate the graduate programs from the different areas of the project. Efforts will also me made to integrate the general community and schools in the region to discuss relevant themes related to nutritional and pharmacological strategies and sustainable attitudes. These transdisciplinary and integrating events aim to raise new perspectives and scientific concepts both for the scientific community and general public. Currently, the GP in Pharmacology has one visiting professor with experience at the Universidad de Buenos Aires (Argentina). The GP in Visual Arts has had experience with expositions and curatorship, having organized in 2017 the 12th Symposium of Contemporary Art: exposition activities and curating strategies, held in conjunction with, FACTORS 4.0/Bioarte, with participating researchers from the U.S., Mexico and Argentina. The GP in Food Science and Technology and GP in Toxicological Biochemistry have organized biennial workshops with the participation of renowned foreign researchers. With CAPES/PrInt funding, the groups aims to increase the number of visiting professors and other international activities on this theme.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Number of foreign professors received
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 3 - Indicator 2
Type – Quantitative
Indicator - Number of events organized
Current situation – 2
Goal for the 2nd year – 3
Final goal – 4

Theme 1: One Health
Goal 5: Aim to understand diseases and treatments for the human reproductive system, using translational models.

Activity 1 - Develop biotechnologies applied to reproductive diseases.
Start date - 01/2019 **End date - 07/2022**
Description – Apply innovative biotechnologies as support and/or treatment in reproductive diseases in humans, such as congenital adrenal hyperplasia, and aid in the management of disturbances such as polycystic ovary syndrome and hypogonadotrophic hypogonadism, using animal models. Evidence has shown that these technologies will allow the creation of transformational therapeutic interventions and facilitate the adaptation of animal and plant life to face the changes occurring on the planet.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Application of biotechnology in projects
Current situation – 2
Goal for the 2nd year – 3
Final goal - 5

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Support for reproductive diseases

Current situation – Satisfactory
Goal for the 2nd year – Good
Final goal - Great

Theme 1: One Health
Goal 6: Develop, implement and share new knowledge and methodologies with a focus on intelligent molecules and sustainable attitudes as ways to promote health, fostering transdisciplinarity.

Activity 1 - Develop projects with a focus on intelligent molecules and sustainable attitudes as ways to promote health, fostering transdisciplinarity.
Start date - 01/2019 **End date - 07/2022**
Description – Post-doctorate programs abroad, work missions for technical visits, trainings, seminars and theoretical-practical courses at foreign institutions.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of publications with foreign co-authors
Current situation – 30
Goal for the 2nd year – 36
Final goal - 40

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Number of formal international cooperation agreements
Current situation – 5
Goal for the 2nd year – 7
Final goal – 12

Activity 2 - Train faculty abroad in the area of intelligent molecules sustainable attitudes as ways to promote health.
Start date - 01/2019 **End date - 07/2022**
Description – Seek to advance the study of intelligent molecules and sustainable attitudes as ways to promote health, fostering transdisciplinarity in studies on human health promotion, in line with the One Health concept (human health – animal health – ecosystem). These themes will be developed in post-doctorate studies abroad (visiting professor abroad), work missions for technical visits, trainings, seminars and theoretical-practical courses at foreign institutions. Currently, 20 faculty members have international experience. The group aims to increase this number through mobility programs with Keele University (England), the University of British Columbia (Canada), ICMAN – CSIC | Instituto de Ciencias Marinas de Andalucía (Spain), the Universidad de León (Spain), the Universidad Autónoma de México (Mexico), Albert Einstein College of Medicine (U.S.), the Universitá degli Studi di Firenze (Italy), UCLA University (U.S.), Università Degli Studi Di Torino, (Italy), Universidad de Granada (Spain), Centro Tecnológico de La Carne (Spain), Universidad Autónoma de Querétaro (Mexico), Ohio State University (U.S.), Danmarks Tekniske Universitet (Denmark) and Technische Universitat Munchen (Germany).

Activity 2 - Indicator 1

Type – Qualitative
Indicator - Impact factor of scientific publications
Current situation – Good
Goal for the 2nd year – Very good
Final goal - Great

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Professors with international experience
Current situation – 20

Goal for the 2nd year – 25
Final goal - 30

Theme 1: One Health
Goal 7: Study ethiopathogenetic, epidemiological and therapeutic aspects of prevalent chronic diseases, expanding the use of translational models.

Activity 1 - Train human resources in the area of chronic musculoskeletal diseases and endocrine-metabolic diseases prevalent in the population.
Start date - 01/2019 **End date - 07/2022**
Description – Investigate biochemical, hormonal, genetic and molecular aspects of chronic musculoskeletal and endocrine-metabolic diseases and new diagnostic methods and potential treatments for these illnesses. Train faculty abroad in post-doctorate programs (visiting professor abroad) work missions for technical visits, trainings, seminars and theoretical-practical courses at foreign institutions. The aim of these activities is to strengthen the already existent partnership with Imperial College of London (England).

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Qualified professors
Current situation – 1
Goal for the 2nd year – 2
Final goal - 3

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Application of this theme in projects
Current situation – 2
Goal for the 2nd year – 3
Final goal – 5

Activity 1 - Indicator 3

Type – Qualitative
Indicator - Support for chronic musculoskeletal and endocrine-metabolic diseases
Current situation – Satisfactory
Goal for the 2nd year – Good
Final goal – Great

Theme 1: One Health
Goal 8: Train researchers with knowledge and vision to develop nutritional and pharmacological strategies and sustainable attitudes to promote health.

Activity 1 - Promote student participation in sandwich PhD programs at foreign laboratories.
Start date - 01/2019 **End date - 07/2022**
Description – Promote graduate student mobility in the international research network and attract young talent to UFSM to foster global development. The aim is to increase mobility programs and strengthen ties with partner universities in the area of nutritional and pharmacological strategies and sustainable attitudes to promote health, especially Keele University (England), the University of British Columbia (Canada), ICMAN – CSIC | Instituto de Ciencias Marinas de Andalucía (Spain), the Universidad de León (Spain), the Universidad Autónoma de México (Mexico), Albert Einstein College of Medicine (U.S.), the Universitá degli Studi di Firenze (Italy), UCLA University (U.S.), Università Degli Studi Di Torino, (Italy), Universidad de Granada (Spain), Centro Tecnológico de La Carne (Spain), Universidad Autónoma de Querétaro (Mexico), Ohio State University (U.S.), Danmarks Tekniske Universitet (Denmark) and Technische Universitat Munchen (Germany). Over the last several years, an average of 4 students per year have participated in sandwich PhD programs abroad.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of post-doctoral students with experience abroad
Current situation – 3
Goal for the 2nd year – 9
Final goal - 16

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Student participation in international publications
Current situation – Good
Goal for the 2nd year – Very good
Final goal – Very good

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Number of dissertations resulting from sandwich PhD programs abroad (per year)
Current situation – 4
Goal for the 2nd year – 8
Final goal – 16

Activity 2 - Attract foreign students in the area of nutritional and pharmacological strategies and sustainable attitudes to promote health.
Start date - 01/2019 **End date - 07/2022**
Description – The GP in Toxicological Biochemistry (GPBT) has wide experience receiving foreign students (mainly through CNPq/TWAS), having received 10 students over the last four years and offering classes in English on a regular basis. In this project, the GPBT will provide its experience and help the other graduate programs involved in the reception of foreign students. Thus, this activity will increase the international visibility of the GPs involved in the context of active partnerships. This includes foreign publicity, training of faculty to give classes in English, regular offer of classes in English, reception of foreign students to study in master's and PhD programs, with funding from the countries of origin, through PEC-PG/CNP projects among others.

Activity 2 - Indicator 1

Type – Qualitative
Indicator - Publicity of Graduate Programs abroad
Current situation – regular
Goal for the 2nd year – regular
Final goal - Good

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Qualified professors to give courses in English
Current situation – 8
Goal for the 2nd year – 10
Final goal – 12

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Number of foreign students received
Current situation – 6
Goal for the 2nd year – 6
Final goal – 12

Activity 2 - Indicator 4

Type – Quantitative
Indicator - Course offerings in English
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Theme 1: One Health
Goal 9: Develop/construct vaccine vector platforms for agents of veterinary interest.

Activity 1 - Development, transfer and implementation of technologies for genetic manipulation of viral agents to construct vaccine vectors.
Start date - 01/2019 **End date - 07/2022**
Description – Use bioinformatics and its applications in reverse genetics, bioinformatics instruments, cloning and expression strategies, deletion and effect assessment strategies, notions of biosecurity and ethical and legal issues related to GMO manipulation. Demonstrate and apply techniques and processes of genetic manipulation, gene cloning and expression and training in the use of biotechnology equipment.

Activity 1 - Indicator 1

Type – Qualitative
Indicator - Support for animal viral diseases
Current situation – Satisfactory
Goal for the 2nd year – Good
Final goal - Great

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Application of genetic manipulation technology in the development of veterinary vaccines
Current situation – 2
Goal for the 2nd year – 3
Final goal – 5

Theme 1: One Health
Goal 10: Develop projects with a focus on bioactive compounds and food quality for health promotion.

Activity 1 - Train faculty abroad with a focus on bioactive compounds and food quality for health promotion.
Start date - 01/2019 **End date - 07/2022**
Description – Seek improvements in the isolation of bioactive compounds and their application in the formulation of functional foods, in the identification and characterization of bioactive compounds (carotenoids, polyphenols, terpenoids, oligosaccharides, among others), to reduce risk of chronic diseases, as well as the evaluation of food contamination by fungi and pesticides. These themes will be the focus of post-doctorate programs (visiting professor abroad) work missions for technical visits, trainings, seminars and theoretical-practical courses at foreign institutions. The aim of these activities is to strengthen the already existent partnerships with Università Degli Studi Di Torino, (Italy), Universidad de Granada (Spain), Centro Tecnológico de La Carne (Spain), Universidad Autónoma de Querétaro (Mexico), Ohio State University (U.S.), Danmarks Tekniske Universitet (Denmark) and Technische Universitat Munchen (Germany).

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Professors with international experience
Current situation – 2
Goal for the 2nd year – 2

Final goal - 3

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Impact factor of scientific publications
Current situation – Good
Goal for the 2nd year – Good
Final goal – Very good

Activity 2 - Develop joint international projects with a focus on bioactive compounds and food quality for health promotion.
Start date - 01/2019 **End date - 07/2022**
Description – A healthy and balanced diet is one of the main means of maintaining health and preventing chronic and degenerative diseases. Several plant foods have been shown to efficiently maintain health and this has been linked to the presence of bioactive compounds, such as carotenoids, polyphenols, terpenoids, oligosaccharides, among others. In this context, the identification and quantification of bioactive compounds in Brazilian flora and in the residues from processing products of plant origin and the development of processes that permit the use of these plant sources to extract bioactive compounds for the food and cosmetics industry will bring important benefits for human health, besides adding value to production chains and reducing the environmental impact of these activities. On the other hand, the chemical or microbiological contamination of food puts human health at risk due to the toxic effects of pesticides, heavy metals and other environmental contaminants and the potential for infection from pathogenic and or toxin-producing microorganisms. This group aims to develop innovative methods to evaluate fungal contamination of food and prevention strategies, through already existent partnerships with Università Degli Studi Di Torino, (Italy), Universidad de Granada (Spain), Centro Tecnológico de La Carne (Spain), Universidad Autónoma de Querétaro (Mexico), Ohio State University (U.S.), Danmarks Tekniske Universitet (Denmark) and Technische Universitat Munchen (Germany).

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of international cooperation projects
Current situation – 2
Goal for the 2nd year – 4
Final goal - 5

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Number of publications with foreign co-authors
Current situation – 8
Goal for the 2nd year – 12
Final goal – 15

Theme 2: Sustainability and intelligent attitudes
Goal 1: Evaluate, develop and implement research and technology for management of ecosystems and sustainable production.

Activity 1 - Develop technologies to accelerate recovery of secondary subtropical forests.
Start date - 01/2019 **End date - 07/2022**
Description – Continue to study acceleration processes for environmental recovery. This includes soil and water protection, and improvement of the quality of plants and the ecosystem as a whole, preserving the economic interests of landowners as well as the environment.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of articles published in the area of secondary forests.

Current situation – 2
Goal for the 2nd year – 2
Final goal - 4

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Train human resources in management of secondary forests.
Current situation – 2
Goal for the 2nd year – 2
Final goal – 4

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Develop secondary forest management protocol
Current situation – 0
Goal for the 2nd year – 1
Final goal – 1

Activity 2 - Train human resources in environmental recovery.
Start date - 01/2019 End date - 07/2022
Description – Research leads to the development of technologies and processes, many fit for patenting. For this to occur it is necessary to train specialized human resources. This activity encompasses training of faculty and students abroad through sandwich PhD and post-doctorate programs abroad, as well as at UFSM for foreign students, faculty and researchers; international joint degree programs; offering courses with the participation of foreign faculty and students, in English or Spanish, and traditional or videoconferencing classes; publication of abstracts, articles and books in English; organization and participation in international events; transfer of technology to the community.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of specialized degrees
Current situation – 4
Goal for the 2nd year – 2
Final goal - 10

Activity 3 - Conduct soil resilience research in degraded sandy areas.
Start date - 01/2019 End date - 07/2022
Description – In the state of Rio Grande do Sul, there are thousands of hectares of degraded sandy areas, due to the intensive use of soil for agriculture and livestock. Research has led to soil recovery techniques, such as the use of forest species. This process speeds up environmental recovery allowing reintegration of productive areas. The GP in Forest Engineering concentrates activities with two active and long-lasting partnerships, with the Natural Resources and Life Sciences University, BOKU, (Austria) and the University of Freiburg (Germany), two renowned institutions linked to development and application of sustainable forest management, which have allowed the existence of European forests until today. These collaborations have been active since 1970 and 1985, respectively, both involving faculty and students and joint research projects.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Train human resources
Current situation – 4
Goal for the 2nd year – 2
Final goal - 6

Activity 3 - Indicator 2

Type – Quantitative

Indicator - Install and conduct experiments
Current situation – 2
Goal for the 2nd year – 2
Final goal – 4

Activity 3 - Indicator 3

Type – Quantitative
Indicator - Number of articles published
Current situation – 3
Goal for the 2nd year – 2
Final goal – 5

Theme 1: Sustainability and intelligent attitudes
Goal 2: Innovate and transfer technologies and sustainable land development practices for an intelligent society.

Activity 1 – Develop research and train human resources to construct sustainable ecosystems.
Start date - 01/2019 **End date - 07/2022**
Description – This activity aims to develop strategies to promote sustainable land development with partners at the Universidad Nacional de Rosario (Argentina); Instituto Nacional de Tecnología Agropecuaria (Argentina); Universidad Autónoma del Estado de México (Mexico); Universidad Autónoma de Chiapas (Mexico); Centro de Investigación y Tecnología Agroalimentaria de Aragon (Spain); Universidad Autónoma de Madrid (Spain), Universidad de Santiago de Compostela (Spain); Universidad de Sevilla (Spain); École des Hautes Études en Sciences Sociales de Paris (France), Institut Nacional de la Recherche Agronomique (France), Université de Sorbonne (France).

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of articles published.
Current situation – 3
Goal for the 2nd year – 2
Final goal - 4

Activity 1 - Indicator 2

Type – Quantitative
Indicator – Number of professors with international tranning
Current situation – 0
Goal for the 2nd year – 2
Final goal – 4

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Number of PhD students in international mobility
Current situation – 1
Goal for the 2nd year – 2
Final goal – 4

Activity 1 - Indicator 4

Type – Quantitative
Indicator - Number of Visiting Professors
Current situation – 0
Goal for the 2nd year – 2
Final goal – 4

Theme 2: Sustainability and intelligent attitudes
Goal 3: Promote research on evolutionary ecology and conservation of Brazilian biota

Activity 1 – Train human resources in biodiversity.
Start date - 01/2019 **End date - 07/2022**
Description – International joint research projects with complementary experiments at laboratories in Brazil and abroad; Training of faculty and students through sandwich PhD, post-doctorate and visiting professor programs at UFSM and abroad; joint degree programs.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of senior visiting professors
Current situation – 1
Goal for the 2nd year – 2
Final goal - 3

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Participation of professors at international congresses
Current situation – 1
Goal for the 2nd year – 5
Final goal – 8

Activity 1 - Indicator 3

Type – Quantitative
Indicator - PhD students trained abroad
Current situation – 4
Goal for the 2nd year – 6
Final goal – 10

Activity 2 – Generate shared knowledge and train human resources in animal biodiversity
Start date - 01/2019 **End date - 07/2022**
Description – International joint research projects with complementary experiments at laboratories in Brazil and abroad; Training of faculty and students through sandwich PhD, post-doctorate and visiting professor programs at UFSM and abroad; joint degree programs. The GP in Animal Biodiversity aims to extend collaborations with the Centro de Investigaciones Científicas y Transferencia de Tecnología a la Producción (Argentina); Field Museum of Natural History (U.S.); George Washington University (U.S.); Liverpool John Moores University (England); Smithsonian Institution (U.S.); North Carolina Museum of Natural Sciences (U.S.); Université de Montpellier II (France); Università degli Studi di Napoli (Italy); University of Turku (Finland); among others.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of scientific articles published in the area of biodiversity (Qualis A2 and A1)
Current situation – 21
Goal for the 2nd year – 35
Final goal - 50

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Number of PhDs completed in biodiversity
Current situation – 6

Goal for the 2nd year – 12
Final goal – 25

Theme 2: Sustainability and intelligent attitudes
Goal 4: Attract international groups of excellence to develop joint research activities in Brazil.

Activity 1 – Intensify activity in international publishing networks.
Start date - 08/2018 **End date - 06/2022**
Description – The experience of students abroad is based on the development of part of their research project at foreign laboratories with the aid of foreign researchers. This exchange of experiences and collaboration results in joint publications on research results and qualifies student work in relation to protocols, data analysis and interpretation and scientific writing. It also aids the Brazilian group to better research infrastructure. In addition, it leads to opportunities with new partners, as it provides greater international visibility.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of international publications (Qualis A1 and A2)
Current situation – 30
Goal for the 2nd year – 40
Final goal - 50

Activity 2 – Attract foreign researchers to provide training in Brazil and exchange of experiences.
Start date - 08/2018 **End date - 12/2021**
Description – Besides faculty visits and trainings abroad, it is fundamental for all international researchers to know the entire group, especially the students and the infrastructure. The participation of foreign researchers in local activities leads to more efficient strategies for reaching research goals. In addition, they contribute by offering courses, training and lectures, reaching a greater number of students and participating researchers.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of trainings
Current situation – 5
Goal for the 2nd year – 8
Final goal - 12

Activity 3 – Increase international visibility.
Start date - 08/2018 **End date - 06/2022**
Description – The attraction of international research groups of excellence to develop research in Brazil will only be possible by seeking contacts and demonstrating technical and scientific quality and excellence in laboratories, human resources and publications. Thus, the UFSM research group needs to demonstrate qualified publications and participation at international events, followed by work missions to establish partnerships.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Participation in events abroad
Current situation – 4
Goal for the 2nd year – 6
Final goal - 8

Theme 2: Sustainability and intelligent attitudes
Goal 5 Scientific and academic development in agricultural production systems to benefit the soil, water and atmosphere.

Activity 1 – Increase and consolidate international partnerships.
Start date - 08/2018 **End date - 06/2022**
Description – Attract foreign research institutions of excellence and establish lasting and productive partnerships to develop human resources, generate qualified scientific knowledge, improve infrastructure, increase quality and quantity of publications, generate new technological products and patents. Expand existing partnerships, which have unquestionably contributed to the aspects mentioned above.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Agreements and partnerships with international institutions
Current situation – 33
Goal for the 2nd year – 38
Final goal - 43

Activity 2 – Update technical-scientific methods.
Start date - 08/2018 **End date - 06/2022**
Description – Provide faculty opportunities for professional development in areas of interest, through work missions, training courses and grants for junior and senior visiting professor programs abroad. The group will establish an internal plan to provide support in teaching, research and extension for faculty participating in short and long-term programs and technical visits to supervise projects in progress. Work missions are strategically planned to participate in international scientific meetings and make contacts with potential partners.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of trainings
Current situation – 1
Goal for the 2nd year – 3
Final goal - 5

Activity 3 – Technical-scientific development of students.
Start date - 08/2018 **End date - 06/2022**
Description – Provide current students and recently graduated PhD students the opportunity for sandwich or post-doctorate programs at foreign institutions of excellence, especially partner institutions. Students can also take advantage of short-term work missions to participate in international scientific meetings.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Number of trainings
Current situation – 16
Goal for the 2nd year – 32
Final goal - 48

Theme 2: Sustainability and intelligent attitudes
Goal 6: Consolidate and increase collaboration with international groups of excellence

Activity 1 – Attract international researchers to offer training courses in Brazil.
Start date - 01/2019 **End date - 07/2022**
Description – The aim is to increase international collaborations by 50%, consolidating an international research network on the theme of agriculture. Besides UFSM faculty technical visits and training abroad, it is fundamental for all international researchers to know the entire group, especially the students and the infrastructure. The participation of foreign researchers in local activities leads to more efficient strategies for reaching research goals. In addition, they contribute by offering courses, training and lectures, reaching a greater number of students and participating researchers.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Number of trainings
Current situation – 3
Goal for the 2nd year – 5
Final goal - 7

Activity 2 – Increase participation and presentations at international events.
Start date - 01/2019 **End date - 07/2022**
Description – The attraction of international research groups of excellence to develop research in Brazil will only be possible by seeking contacts and demonstrating technical and scientific quality and excellence in laboratories, human resources and publications. Thus, the UFSM research group needs to demonstrate qualified publications and participation at international events, followed by work missions to establish partnerships.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Participation in international events and missions
Current situation – 5
Goal for the 2nd year – 6
Final goal - 7

Activity 3 – Expand international networks for publication with groups of excellence
Start date - 01/2019 **End date - 07/2022**
Description – The experience of students abroad is based on the development of part of their research project at foreign laboratories with the aid of foreign researchers. This exchange of experiences and collaboration results in joint publications on research results and qualifies student work in relation to protocols, data analysis and interpretation and scientific writing. It also aids the Brazilian group to better research infrastructure. In addition, it leads to opportunities with new partners, as it provides greater international visibility.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Number of international publications (Qualis A1 and A2)
Current situation – 20
Goal for the 2nd year – 30
Final goal - 40

Theme 2: Sustainability and intelligent attitudes
Goal 7: Scientific development for innovative solutions in the area of biodiversity, molecular biology, genomics, bioinformatics, modeling and microbiology.

Activity 1 – Increase and consolidate international collaborations.
Start date - 01/2019 **End date - 07/2022**
Description – Attract foreign research institutions of excellence and establish lasting and productive partnerships to develop human resources, generate qualified scientific knowledge, improve infrastructure, increase quality and quantity of publications, generate new technological products and patents. Expand existing partnerships, which have unquestionably contributed to the aspects mentioned above. The group has published 249 scientific articles and book articles in foreign languages, 110 of which were published with foreign coauthors, including researchers from Germany, Argentina, Belgium, Australia, Great Britain, Chile, China, Denmark, Slovenia, Spain, France, the Netherlands, Mexico, the U.S., Canada, Paraguay, Peru and Uruguay. Institutions involved include: Institute of Crop Science and Resource Conservation and Horticultural Sciences of the University of Bonn, Germany; Department of Biology of the University of Copenhagen, Denmark; Universidad de Buenos Aires, Argentina; Universidad Nacional de La Plata, Argentina; Museo Bernardino Rivadavia de Buenos Aires, Argentina; Queensland Department of Agriculture, Fisheries and Forestry, Australia; Centro Universitario Regional del Este of the Universidad de la República, Uruguay; Red de

Biodiversidad y Sistemática of the Instituto de Ecologia de Veracruz, Mexico; Universidad Católica Nuestra Señora da la Asunción-Itapúa, Paraguay; CSIRO, Australia; University of Nebraska-Lincoln, U.S.; Laboratoire Evolution, Génomes, Comportement, Ecologie CNRS, Univ. Paris-Sud, IRD, Université Paris-Saclay, Gif-sur-Yvette Cedex, France; Universidade de Vigo, Spain; Slovenian Forestry Institute; Dartmouth College, USA; Brookhaven National Laboratory, National Synchrotron Light Source, USA; University of Southhampton, UK; University of Hohenheim, Germany; UGhent, Belgium; Netherlands Institute of Ecology; University of Nottingham, UK; University of California - Davis, U.S.; University of Nebraska - Lincoln, U.S.; Universität Hohenheim and Kompetenzzentrum Obstbau-Bodensee, Germany; Centro di Sperimentazione Agraria e Florestale Laimburg, Italy; University of Toronto, Canada.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Agreements and partnerships with international institutions
Current situation – 19
Goal for the 2nd year – 38
Final goal - 43

Activity 2 – Expand technical-scientific development of students.
Start date - 01/2019 **End date - 07/2022**
Description – We aim to increase by 50% the number of master`s, PhD and post-doctorate degrees at an international level in the area of Innovative, Intensive and Sustainable Agriculture, through short work missions, sandwich PhD programs and other modalities abroad with groups of excellence, especially partner institutions.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of Master and PhD students with publications with international collaborators
Current situation – 4
Goal for the 2nd year – 6
Final goal - 10

Activity 3 – Expand technical-scientific development of students.
Start date - 01/2019 **End date - 07/2022**
Description – We aim to increase by 50% the number of master`s, PhD and post-doctorate degrees at an international level in the area of Innovative, Intensive and Sustainable Agriculture, through short work missions, sandwich PhD programs and other modalities abroad with groups of excellence, especially partner institutions.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Number PhD with international cotutelle.
Current situation – 1
Goal for the 2nd year – 2
Final goal - 2

Activity 4 – Consolidate and extend scientific and technical competencies of faculty and researchers
Start date - 01/2019 **End date - 07/2022**
Description – The scientific and technical competencies, related to the operational infrastructure of teaching and research and involved in internationalization, comprise mainly molecular analyses, phylogenetic studies, genomics, transcriptomes: isolation, selection, identification and evaluation of microorganism for production of agricultural bioproducts; development and field evaluation of bioproducts and biological solutions to protect plants; modeling of dispersion and impact of invasive pests; modeling of crop growth in scenarios of global climate change; genetic transformation of insects and gene function in plants; storage and reduction of losses for plant products (fruits and grains). These competencies will be potentialized through consolidation of international partnerships with

institutions and researchers of excellence. The aim is to create thematic multi-institutional courses in the GPs to integrate faculty from the different institutions: such as “Molecular tools applied to invasive pests” and “Global Yield gap analysis”. We also seek to increase the participation of faculty in international scientific events on the theme of innovative, intensive and sustainable agriculture, consolidating an international research network.

Activity 4 - Indicator 1

Type – Quantitative
Indicator - Number of trainings/visits
Current situation – 3
Goal for the 2nd year – 6
Final goal - 9

Theme 2: Sustainability and intelligent attitudes
Goal 8: Develop research in biodiversity and ecosystem sustainability: values of pasture ecosystems in the face of global change and challenges.

Activity 1 – Publicize research and course offerings internationally.
Start date - 01/2019 **End date - 07/2022**
Description – Activities will focus on publicizing and creating synergy and or complementary relationships with other international teams in the same areas of interest. This will include teaching missions involving sandwich PhD programs and foreign visiting professor and post-doctorate programs both in Brazil and abroad; joint degree programs; course offerings with the participation of foreign faculty or students in English or Spanish, both by traditional classroom and videoconferencing; production of publicity material to be used in courses in Brazil and abroad, especially filming of classes or conferences to be made available on the LIFLOD site; publication of abstracts, articles and book chapters in English with shared scientific results and international coauthorship; organization and participation in international events.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Creation of site to publicize teaching and research activities
Current situation – 0
Goal for the 2nd year – 0
Final goal - 1

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Short courses with partner researchers
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 – Promote shared research on biological processes, functions and values of pasture ecosystems.
Start date - 01/2019 **End date - 07/2022**
Description – Shared research will be organized in four research sub-themes. The first aims to understand biological processes, functions and values of pasture ecosystems (including environmental, socioeconomic and cultural aspects). The second aims to develop tools, technologies and practices for ecosystem management, integrating the main innovations and sustainable alternatives with consolidated practices, involving the different actors of the system. The third aims to evaluate products, chains and integrate current and future markets with the innovations and alternatives studied in the second group. The fourth will evaluate the process of land development in the regions of interest, with their geoclimatic and socioeconomic diversity, and considering the perspectives and alternatives that have been evaluated in other regions by international partners. The GP in Animal Science will continue activities that began over the last five years with Agri-Food

(Canada), INRA (France), University of Sydney (Australia), University of Kentucky (U.S.), University of Nebraska (U.S,), UDELAR (Uruguay), Universidad de Los Llanos (Colombia) and Universidade Técnica de Lisboa (Portugal). In addition, one of our faculty is the coordinator of LIFLOD (Livestock Farming & Local Development, www.liflod.org), an international and multidisciplinary network with researchers from several regions of the world.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Number of PhD joint degree programs
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Number of professor trainings
Current situation – 1
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Number of student mobility programs.
Current situation – 1
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 4

Type – Quantitative
Indicator - Attraction of young talent from abroad for work missions
Current situation – 0
Goal for the 2nd year – 1
Final goal - 1

Activity 2 - Indicator 5

Type – Quantitative
Indicator - Number of articles published
Current situation – 6
Goal for the 2nd year – 8
Final goal - 10

Theme 2: Sustainability and intelligent attitudes
Goal 9: Increase interaction with international institutions of excellence in energy resources

Activity 1 – International Cooperation Agreements.
Start date - 08/2018 **End date - 07/2022**
Description – Establish international cooperation agreements with institutions of excellence in energy resources, especially with the following countries: Germany, Canada, Denmark, Spain, France, Italy, Argentina and the U.S.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - International agreements

Current situation – 2
Goal for the 2nd year – 4
Final goal - 6

Activity 2 – Technical-Scientific Production.
Start date - 08/2018 **End date - 07/2022**
Description – Edit and publish books and relevant journals with international coauthorship in energy resources.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Publication of books with international coauthors
Current situation – 2
Goal for the 2nd year – 4
Final goal - 6

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Publication of scientific papers with international coauthors
Current situation – 30
Goal for the 2nd year – 40
Final goal - 50

Activity 3 – Academic mobility.
Start date - 08/2018 **End date - 07/2022**
Description – Academic mobility activities will include: work missions, sandwich PhD programs, foreign visiting professor abroad and in Brazil, aiming to expand the network of international collaboration in energy resources, mainly with the following institutions: Universidad de Oviedo, Spain; Universitat Politècnica de Catalunya, Spain; University of Florida, U.S.; Colorado School of Mines, U.S.; Virginia Polytechnic Institute and State University, U.S.; Illinois Institute of Technology, U.S.; New Mexico State University, U.S.; Aalborg University, Denmark; Fraunhofer Institute for Solar Energy Systems ISE, Germany; Otto-von-Guerike University Magdeburg, Germany; Universität Kassel, Germany; Concordia University, Canada; Queen´s University - Kingston, Canada; CNR/ISAC, Italy; Colorado State University, U.S.; Universidad de Buenos Aires, Argentina; University of Bristol, United Kingdom; University of California, U.S.; University of Tuscia, Italy; Penn State University – PSU, U.S.; State University of New York – SUNY, U.S.; University of Oklahoma, U.S.; Universidad del Nordeste, Argentina; Universidad del Litoral, Argentina; Politecnico di Torino, Italy; Universitá del Piemonte Orientale, Italy; Université Toulouse 3 - Paul Sabatier, France.

Activity 3 - Indicator 1

Type – Quantitative
Indicator - Faculty work missions abroad
Current situation – 2
Goal for the 2nd year – 4
Final goal - 6

Activity 3 - Indicator 2

Type – Quantitative
Indicator – International mobility
Current situation – Low
Goal for the 2nd year – Avarege
Final goal - High

Theme 2: Sustainability and intelligent attitudes
Goal 10: Develop qualified human resources in the area of energy resources

Activity 1 – Defenses of Theses and Dissertations
Start date - 08/2018 **End date - 07/2022**
Description – Theses and dissertations with the participation of renowned international professors in energy resources as co-advisors.

Activity 1 - Indicator 1

Type – Quantitative
Indicator – Number of Defense of Theses and Dissertations with international co-advisors (per year).
Current situation – 2
Goal for the 2nd year – 3
Final goal - 4

Activity 2 – Sandwich PhD
Start date - 08/2018 **End date - 07/2022**
Description – Participation in sandwich PhD programs at international institutions of excellence in energy resources, especially with: Universidad de Oviedo, Spain; Universitat Politècnica de Catalunya, Spain; University of Florida, U.S.; Colorado School of Mines, U.S.; Virginia Polytechnic Institute and State University, U.S.; Illinois Institute of Technology, U.S.; New Mexico State University, U.S.; Aalborg University, Denmark; Fraunhofer Institute for Solar Energy Systems ISE, Germany; Otto-von-Guerike University Magdeburg, Germany; Universität Kassel, Germany; Concordia University, Canada; Queen´s University - Kingston, Canada; CNR/ISAC, Italy; Colorado State University, U.S.; Universidad de Buenos Aires, Argentina; University of Bristol, United Kingdom; University of California, U.S.; University of Tuscia, Italy; Penn State University – PSU, U.S.; State University of New York – SUNY, U.S.; University of Oklahoma, U.S.; Universidad del Nordeste, Argentina; Universidad del Litoral, Argentina; Politecnico di Torino, Italy; Universitá del Piemonte Orientale, Italy; Université Toulouse 3 - Paul Sabatier, France.

Activity 2 - Indicator 1

Type – Quantitative
Indicator – PhD scholarships (per year)
Current situation – 3
Goal for the 2nd year – 5
Final goal - 7

Theme 2: Sustainability and intelligent attitudes
Goal 11: Implant a multi-user laboratory to be an international reference in energy resources

Activity 1 – Multi-user laboratory.
Start date - 08/2018 **End date - 07/2022**
Description – Implant multi-user laboratories that are an international reference in energy resources, especially the Laboratory of Distributed Generation, the laboratory of High-tension Assays and the Laboratory of Micrometeorology.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Laboratories that are an international reference
Current situation – 1
Goal for the 2nd year – 2
Final goal - 3

Activity 2 – International agreements.
Start date - 08/2018 **End date - 07/2022**
Description – Attract international resources through agreements with businesses and funding agencies to contribute to the implantation of multi-user laboratories that are an international reference in energy resources.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Amount of external funds raised (R$/yr)
Current situation – 400000
Goal for the 2nd year – 700000
Final goal - 1200000

Theme 2: Sustainability and intelligent attitudes
Goal 12: Disseminate knowledge about energy resources

Activity 1 – Participation in Events
Start date - 08/2018 **End date - 07/2022**
Description – Technical presentations at international events and workshops of excellence in energy resources, mainly those sponsored by IEEE - Institute of Electrical and Electronic Engineers and AMS (American Meteorological Society).

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Participation in international events per year
Current situation – 7
Goal for the 2nd year – 10
Final goal - 12

Activity 2 – Event organization.
Start date - 08/2018 **End date - 07/2022**
Description – Organization of international events and workshops of excellence in energy resources with participation of internationally renowned researchers and sponsored in partnership with IEEE South Brazil Section Joint Chapter and IEEE Student Branch of UFSM and Meteorology Societies.

Activity 2 - Indicator 1

Type – Quantitative
Indicator – Organization of international events per year
Current situation – 1
Goal for the 2nd year – 2
Final goal - 3

Activity 3 – Publicity materials.
Start date - 08/2018 **End date - 07/2022**
Description – Elaboration of materials in English and other foreign languages, including teaching materials, GP websites, course descriptions, theses and dissertations, among others, striving towards internationalization.

Activity 3 - Indicator 1

Type – Qualitative
Indicator – Materials produced in a foreign language
Current situation – Low
Goal for the 2nd year – Average
Final goal - High

Theme 3: Tomorrow's materials and clean technologies
Goal 1: Establish new procedures for intensification of industrial processes, striving towards the improvement of production processes

Activity 1 – Develop research and processes to reduce environmental impacts
Start date - 01/2019 **End date - 07/2022**

Description – Promote research and develop products to reduce unit operations and water and energy consumption and effluent generation; employ alternative technologies, such as ultrasound, microwave and ultraviolet (UV) to improve processes, materials or products; develop analytical methods to control processes; evaluate potential impacts of processes and products, from the toxicological, nutritional and/or financial point of view.

Activity 1 - Indicator 1

Type – Quantitative
Indicator – Develop new processes
Current situation – 1
Goal for the 2nd year – 2
Final goal - 4

Activity 1 - Indicator 2

Type – Quantitative
Indicator – Student mobility abroad- Sandwich PhD
Current situation – 1
Goal for the 2nd year – 2
Final goal - 5

Activity 1 - Indicator 3

Type – Quantitative
Indicator – Publication of articles on clean technologies
Current situation – 1
Goal for the 2nd year – 10
Final goal - 20

Activity 1 - Indicator 4

Type – Quantitative
Indicator – Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Theme 3: Tomorrow's materials and clean technologies
Goal 2: Produce and characterize macro and nanoparticulate materials

Activity 1 – Foster student mobility and sandwich PhD programs at international laboratories
Start date - 01/2019 **End date - 07/2022**
Description – Foster graduate student mobility in international research networks and attract young talents to Brazil, for global development on characterization of new materials. This activity aims to expand student mobility at partner universities, especially Freie Universität, Berlin and the Academic Centre for Dentistry Amsterdam (ACTA), Vrije Universiteit Amsterdam and Universiteit van Amsterdam, the Netherlands, as well as expand mobility to other centers of excellence through the establishment of new agreements

Activity 1 - Indicator 1

Type – Quantitative
Indicator – International cooperation agreements
Current situation – 2
Goal for the 2nd year – 3
Final goal - 4

Activity 1 - Indicator 2

Type – Quantitative
Indicator – Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 1 - Indicator 3

Type – Quantitative
Indicator – Reception of post-doctoral students with experience abroad
Current situation – 0
Goal for the 2nd year – 1
Final goal - 3

Activity 2 – Develop projects in cooperation with qualified foreign groups to implement and share new knowledge and methodologies.
Start date - 01/2019 **End date - 07/2022**
Description – This activity aims to solidify research partnerships with foreign groups to develop projects with a focus on production and characterization of macro and nano scale materials, involving different areas of knowledge. Promote joint research and increase the number of joint publications with qualified foreign researchers in this area. Activities include courses, lectures, discussion of joint results, curatorships, workshops and art exhibitions. The aim is also to create and discuss transdisciplinary knowledge at UFSM, to articulate between these knowledges and reflect on the future of GPs at UFSM.

Activity 2 - Indicator 1

Type – Quantitative
Indicator – Visiting professors at UFSM
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 2

Type – Quantitative
Indicator – International seminars
Current situation – 0
Goal for the 2nd year – 1
Final goal - 3

Activity 2 - Indicator 3

Type – Qualitative
Indicator – Consolidation of research lines
Current situation – Good
Goal for the 2nd year – Very good
Final goal - Great

Activity 2 - Indicator 4

Type – Quantitative
Indicator – Publications in specialized international journals
Current situation – 0
Goal for the 2nd year – 3
Final goal - 6

Theme 3: Tomorrow's materials and clean technologies
Goal 3: Develop hydro-environmental models for sustainable ecosystems

Activity 1 – Attract foreign researchers to perform joint studies and to promote the scientific qualification of the UFSM in the area of sustainable ecosystems.
Start date - 01/2019 **End date - 07/2022**
Description – Receive professors from foreign institutions to offer short-term and regular curricular courses, carry out research and participate in supervision of graduate students and in defense committees at the Environmental and Civil Engineering Graduate Programs. This set of activities will result in an increased number of qualified scientific productions from established research groups and the development of new lines of research, besides contributing to the overall growth of the Graduate Programs and its students.

Activity 1 - Indicator 1

Type – Qualitative
Indicator – Consolidate the line of research
Current situation – Regular
Goal for the 2nd year – Good
Final goal - Great

Activity 1 - Indicator 2

Type – Quantitative
Indicator – Phd sandwich
Current situation – 1
Goal for the 2nd year – 3
Final goal - 6

Activity 1 - Indicator 3

Type – Quantitative
Indicator – Number of visiting Professors
Current situation – 1
Goal for the 2nd year – 2
Final goal - 5

Activity 1 - Indicator 4

Type – Quantitative
Indicator – Publication of scientific papers
Current situation – 2
Goal for the 2nd year – 5
Final goal – 8

Activity 1 - Indicator 5

Type – Quantitative
Indicator – Work missions
Current situation – 0
Goal for the 2nd year – 2
Final goal - 5

Activity 2 – Develop research and train human resources to build hydro-environmental models
Start date - 01/2019 **End date - 07/2022**
Description – Professors will carry out work missions for development and stimulation of scientific and technological production and to strengthen ties with partner research groups, developing and qualifying these research networks.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Publication of scientific articles in international journals

Current situation – 0
Goal for the 2nd year – 3
Final goal - 6

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 3
Final goal - 5

Activity 2 - Indicator 3

Type – Qualitative
Indicator – Increase line of research
Current situation – Good
Goal for the 2nd year – Very good
Final goal - Great

Theme 3: Tomorrow's materials and clean technologies
Goal 4: Implement joint degree program in the areas of Chemistry, Physics (Freie Universität Berlin) and Dentistry (Academic Centre for Dentistry Amsterdam (ACTA), Netherlands)

Activity 1 – Promote student mobility in joint degree programs
Start date - 01/2019 **End date - 07/2022**
Description – This activity entails the implementation of a joint degree program in the areas of chemistry, physics (Freie Universität Berlin) and dentistry (Academic Centre for Dentistry Amsterdam (ACTA) – Vrije Universiteit Amsterdam and Universiteit van Amsterdam, the Netherlands). Initially, the participation of candidates in the areas of chemistry and dentistry will be prioritized to develop and characterize inorganic and dental materials. Later, physics students will be selected to participate in projects involving the area of theoretical physics work with quantum mechanics calculations that will help to characterize inorganic and molecular material, to elucidate formation mechanisms and properties.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 3
Final goal - 5

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Sandwich PhD abroad
Current situation – 1
Goal for the 2nd year – 3
Final goal - 6

Activity 2 – Professor mobility – participation in technical visits to consolidate research and implement joint degree program
Start date - 01/2019 **End date - 07/2022**
Description – Promote bilateral mobility for professors to carry out technical visits in order to implement a joint degree program and discuss research development, besides receiving young talent and visiting professors in Brazil to work with research groups and graduate studies. Visiting professors will be selected to work with research groups, aiming to develop areas identified as deficient in human resources, as well as to contribute to the research lines with potential to expand international collaboration.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Visiting Professor in Brazil
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Junior visiting professor abroad
Current situation – 0
Goal for the 2nd year – 2
Final goal – 4

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Senior visiting professor abroad
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Theme 3: Tomorrow's materials and clean technologies
Goal 5: Consolidate Center for Advanced Materials Development (NUDEMA) as a center of excellence in the development and characterization of materials and products

Activity 1 – Intensify international collaboration on research projects to develop and characterize advanced materials
Start date - 01/2019 **End date - 07/2022**
Description – Promote consolidation of NUDEMA as a center of reference in the development and characterization of materials with wide application in different areas of knowledge and potential for product generation. Characterization of materials has been the link between the different research groups involved in this project. This activity strives to consolidate research partnerships and agreements with Freie Universität Berlin and the Academic Centre for Dentistry Amsterdam (ACTA) – Vrije Universiteit Amsterdam and Universiteit van Amsterdam, the Netherlands, through professor and student mobility, including sandwich PhDs, for UFSM and foreign students, as well as short and long-term (post-doctorate) missions of researchers/professors, from UFSM and foreign institutions, and joint degree programs.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Publications in international journals
Current situation – 5
Goal for the 2nd year – 10
Final goal - 20

Activity 1 - Indicator 2

Type – Qualitative
Indicator - Consolidation of the Center in the characterization of materials
Current situation – Good
Goal for the 2nd year – Very good
Final goal - Great

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Number of Young Talents received
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Theme 3: Tomorrow's materials and clean technologies
Goal 6: Develop and validate modern analytical methods to determine residues of agrochemicals and other relevant contaminants in water and related matrices

Activity 1 – Validate standardized operational procedures to determine residues in water and related matrices
Start date - 01/2019 **End date - 07/2022**
Description – Carry out joint research to promote INMETRO accreditation for standard ABNT ISO 17025, for the different methods developed for residue determination. Metrology is a strategic area for economic and social development, as it is part of the basic infrastructure that supports industrial competitivity, health preservation, environmental safety and consumer protection. This activity foresees the publication of joint articles to expand the scope of methods accredited under standard ISO 17025, by the CGCRE of INMETRO. Interaction with international laboratories will contribute to the establishment of new methods for sample preparation/determination and laboratory management.

Activity 1 - Indicator 1

Type – Quantitative
Indicator – Extend scope of INMETRO accreditation
Current situation – 1
Goal for the 2nd year – 2
Final goal - 2

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Sandwich PhD programs
Current situation – 0
Goal for the 2nd year – 3
Final goal - 6

Activity 2 – Develop joint research at centers of international excellence
Start date - 01/2019 **End date - 07/2022**
Description – Provide support to meet current legislation for the standards of water potability for human consumption established by the Rio Grande do Sul Secretary of Health Regulation 320/2014 for additional parameters for agrochemicals necessary in the control and surveillance of water quality for human consumption, as well as biannual control established nationally by the Health Ministry Regulation MS 2914/2011. Thus, in conjunction with international research groups, methods will be developed for sample preparation, using solid phase extraction and multiresidue determination by UHPLC-MS/MS and GC-MS/MS.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Visiting professors at UFSM
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Professor work missions
Current situation – 0

Goal for the 2nd year – 2
Final goal - 5

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Publications in international journals
Current situation – 0
Goal for the 2nd year – 3
Final goal - 7

Theme 2: Tomorrow's materials and clean technologies
Goal 7: Synthesize and characterize new compounds as carriers of biological activity

Activity 1 – Develop research projects with qualified international groups in the synthesis of bioactive compounds
Start date - 01/2019 **End date - 07/2022**
Description – Consolidate research and international cooperation to synthesize compounds that are carriers of biological activity. This entails collaboration from foreign visiting professors at UFSM, specifically from the University of Montreal, Canada, and the Universidade de Aveiro, Portugal, to cooperate with research, seminars, data analysis and discussion of joint results and consolidation of the research network on bioactive compound synthesis.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Visiting professors at UFSM
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Synthesis of bioactive compounds
Current situation – 1
Goal for the 2nd year – 9
Final goal - 14

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Work missions abroad
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 2 – Academic mobility for technical-scientific training
Start date - 01/2019 **End date - 07/2022**
Description – Sandwich PhD programs at the University of Montreal and Universidade de Aveiro. Faculty missions for seminars, discussion of joint research and planning of sandwich programs, in addition to formulating a proposal to attract Portuguese and Canadian students to the GP in Chemistry at UFSM.

Activity 2 - Indicator 1
Type – Quantitative
Indicator - Sandwich PhD abroad
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 3

Type – Quantitative
Indicator – Foreign post-doctorates at UFSM
Current situation – 0
Goal for the 2nd year – 1
Final goal - 1

Theme 3: Tomorrow's materials and clean technologies
Goal 8: Expand and consolidate scientific development and joint international research in the area of Chemistry of Supramolecular Systems and its application in the understanding of complex materials

Activity 1 – Increase scientific and technological production in collaboration with foreign researchers
Start date - 01/2019 **End date - 07/2022**
Description – Increase international collaboration on scientific publications and deposit at least one international patent. The proponent group is already in the development phase of products in collaboration with foreign groups. Collaboration of foreign visiting professors and scientific development through work missions, attraction of young talents and joint research will contribute to the generation of products with a high patent potential. This research will also increase the number of publications with international co-authors and the mean Impact Factor of the group.

Activity 1 - Indicator 1

Type – Qualitative
Indicator – Increase Impact Factor of publications
Current situation – Good
Goal for the 2nd year – Increase in 20%
Final goal - Increase in 40%

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Publication of international scientific articles
Current situation – 3
Goal for the 2nd year – 6
Final goal - 15

Activity 1 - Indicator 3

Type – Quantitative
Indicator - Patent deposits
Current situation – 1
Goal for the 2nd year – 1
Final goal - 2

Activity 2 – Student and faculty mobility for scientific development
Start date - 01/2019 **End date - 07/2022**
Description – Send students to Sandwich PhD programs abroad and increase the number of foreign visiting professors aiming toward the exchange of knowledge and increase in the quality of human resources and scientific production.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Sandwich PhD abroad
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Professor work missions
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Visiting Professor in Brazil
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Theme 3: Tomorrow's materials and clean technologies
Goal 9: Improve techniques and research methodologies, seeking standards of excellence and development of an international cooperation network

Activity 1 – Foster faculty and student mobility to develop an international research network
Start date - 01/2019 **End date - 07/2022**
Description – Solidify research partnerships and cooperation agreements with foreign groups to develop projects for the production and characterization of materials on the macro and nano scale, which involve different areas of knowledge. Promote joint research and increase the number of joint publications with qualified foreign researchers in this area. Activities include courses, lectures, discussion of joint results, curatorships, workshops and art exhibitions. The aim is also to create and discuss transdisciplinary knowledge at UFSM, to articulate between these knowledges and reflect on the future of GPs at UFSM.

Activity 1 - Indicator 1

Type – Quantitative
Indicator – Organization of international workshop
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Faculty work missions abroad
Current situation – 0
Goal for the 2nd year – 3
Final goal - 7

Activity 1 - Indicator 3

Type – Qualitative
Indicator – Consolidation of international research network
Current situation – Regular
Goal for the 2nd year – Good
Final goal – Very good

Theme 4: Information Society: memory and technologies
Goal 1: Consolidate participation of faculty and Graduate Programs in international research networks, aiming to examine conceptual issues related to memory.

Activity 1 – Develop scientific cooperation projects with foreign researchers to develop new techniques of storage to address the conceptual framework on memory and technologies.
Start date - 01/2019 **End date - 07/2022**
Description – Establish cooperation agreements with foreign researchers to examine theoretical and analytical issues related to the role of memory and its technologies in the production, circulation and dissemination of knowledge produced by the group. Increase the number of joint publications with foreign groups. The programs involved in this project already have a considerable amount of interaction, however much of the work is individual.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Visiting Professor in Brazil
Current situation – 0
Goal for the 2nd year – 10
Final goal - 15

Activity 1 - Indicator 2

Type – Quantitative
Indicator - Short activities
Current situation – 0
Goal for the 2nd year – 2
Final goal - 4

Activity 1 – Indicator 3

Type – Quantitative
Indicator - Senior visiting professor
Current situation – 0
Goal for the 2nd year – 2
Final goal - 5

Activity 1 – Indicator 4

Type – Quantitative
Indicator - Post-doctorate in Brazil
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 1 – Indicator 5

Type – Quantitative
Indicator - Junior visiting professor
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 2 – Participation on technical visits to laboratories of international research groups, besides participating in pertinent international congresses
Start date - 01/2019 **End date - 07/2022**
Description – Faculty work missions and participation in international congresses in the countries selected by this project to discuss joint scientific results. Faculty technical visits in order to: 1)

consolidate international collaboration; b) consolidate lines of research; c) establish new projects; d) promote student mobility; and e) foster foreign researchers to visit UFSM. These activities will strengthen already existent partnerships and promote the creation of new academic-scientific ties.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Work missions
Current situation – 0
Goal for the 2nd year – 17
Final goal - 33

Theme 4: Information Society: memory and technologies
Goal 2: Develop future researchers with knowledge and vision to carry out research on information in the scope of the Information Society and its technologies.

Activity 1 – Promote a high level of development of students, with sandwich PhD programs at partners universities.
Start date - 01/2019 **End date - 07/2022**
Description – Promote graduate student mobility and participation in the international research network and the attraction of young talent to Brazil, to consolidate a high level of research through networks of shared knowledges. Expansion of student mobility at partner universities and establishment of new agreements with other centers of excellence.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Sandwich PhD program
Current situation – 0
Goal for the 2nd year – 4
Final goal - 9

Activity 2 – Attract foreign students in areas that address information systems in the scope of the Information Society.
Start date - 01/2019 **End date - 07/2022**
Description – Increase international visibility of graduate programs to foster effective collaboration, especially to attract foreign students to UFSM. This includes publicity abroad, faculty training to offer a portion of the courses in English and the regular offer of such courses on project themes and reception of foreign graduate students with funding from countries of origin or through specific grants.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Attraction of young talent
Current situation – 0
Goal for the 2nd year – 2
Final goal - 2

Theme 4: Information Society: memory and technologies
Goal 3: Develop international cooperation projects to address issues of memory in the scope of the Information Society and its technologies.

Activity 1 – Increase joint intellectual on issues of memory in the scope of the Information Society and its technologies.
Start date - 01/2019 **End date - 07/2022**
Description – Consolidation of international academic-scientific production through networks of shared knowledge. This entails strengthening existing agreements and establishing new ones through joint academic-scientific production.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Article or book chapter
Current situation – 0
Goal for the 2nd year – 40
Final goal - 80

Theme 4: Information Society: memory and technologies
Goal 4: Develop international cooperation projects for issues related to information systems in the scope of the Information Society and its technologies

Activity 1 – Increase joint intellectual production on issues related to information systems in the scope of the Information Society and its technologies.
Start date - 01/2019 **End date - 07/2022**
Description – Consolidation of international academic-scientific production through networks of shared knowledge. This entails strengthening existing agreements and establishing new ones through joint academic-scientific production.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Article or book chapter
Current situation – 0
Goal for the 2nd year – 40
Final goal - 80

Theme 4: Information Society: memory and technologies
Goal 5: Reflect on the University of the future, from our perspective, in terms of the role of the Information Society and what it potentializes as a technological advance.

Activity 1 – – Develop the writing of a history in the creation of access to new technologies and traditional technologies.
Start date - 01/2019 **End date - 07/2022**
Description – Create information systems for access to new technologies, including those considered traditional, to develop the next generation of researchers with multidisciplinary training, including fundamental aspects of their historical diversity and ethics in the perspective of otherness.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Interdisciplinary seminars
Current situation – 0
Goal for the 2nd year – 4
Final goal - 8

Theme 4: Information Society: memory and technologies
Goal 6: Consolidate participation of faculty in international research networks, striving to examine conceptual issues related to information

Activity 1 – Faculty mobility involving themes and countries selected in the project.
Start date - 01/2019 **End date - 07/2022**
Description – Faculty work missions and participation in international congresses in the countries selected by this project to discuss joint scientific results. Faculty technical visits in order to: 1) consolidate international collaboration; b) consolidate lines of research; c) establish new projects; d) promote student mobility; and e) foster foreign researchers to visit UFSM. These activities will strengthen already existent partnerships and promote the creation of new academic-scientific ties.

Activity 1 - Indicator 1
Type – Quantitative

Indicator - Work missions
Current situation – 0
Goal for the 2nd year – 12
Final goal - 25

Activity 2 – Develop international research projects for issues related to information in the scope of the Information Society and its technologies.
Start date - 01/2019 **End date - 07/2022**
Description – Establish cooperation agreements with foreign researchers to examine theoretical and analytical issues related to the role of information systems and their technologies in the production, circulation and dissemination of knowledge produced by the group. Increase the number of joint publications with foreign groups. The programs involved in this project already have a considerable amount of interaction, however much of the work is individual.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Visiting Professor in Brazil
Current situation – 0
Goal for the 2nd year – 5
Final goal - 8

Activity 2 - Indicator 2

Type – Quantitative
Indicator - Senior visiting professor
Current situation – 0
Goal for the 2nd year – 3
Final goal - 3

Activity 2 - Indicator 3

Type – Quantitative
Indicator - Post-doctorate in Brazil
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Activity 2 – Indicator 4

Type – Quantitative
Indicator - Short activities
Current situation – 0
Goal for the 2nd year – 1
Final goal - 2

Theme 4: Information society: memory and technologies
Goal 7: Train future researchers with knowledge and vision to develop research on memory and its conceptual framework in contemporaneity.

Activity 1 – Attract foreign students in areas that address memory and technologies in the scope of the Information Society.
Start date - 01/2019 **End date - 07/2022**
Description – Increase international visibility of graduate programs to foster effective collaboration, especially to attract foreign students to UFSM. This includes publicity abroad, faculty training to offer a portion of the courses in English and the regular offer of such courses on project themes and reception of foreign graduate students with funding from countries of origin or through specific grants.

Activity 1 - Indicator 1

Type – Quantitative
Indicator - Attraction of young talent
Current situation – 0
Goal for the 2nd year – 2
Final goal - 3

Activity 2 – Promote high level development of students, with sandwich PhD programs at participating institutions.
Start date - 01/2019 **End date - 07/2022**
Description – Promote graduate student mobility and participation in the international research network and the attraction of young talent to Brazil, to consolidate a high level of research through networks of shared knowledges. Expansion of student mobility at partner universities and establishment of new agreements with other centers of excellence.

Activity 2 - Indicator 1

Type – Quantitative
Indicator - Sandwich PhD programs
Current situation – 0
Goal for the 2nd year – 11
Final goal - 19

Theme 4: Information society: memory and technologies
Goal 8: Develop, implement and share new knowledges and methodologies on issues related to memory in the scope of the Information Society and its different technologies.

Activity 1 – Development of researchers through shared knowledge and methodologies in the implementation of an international policy to reflect and produce knowledge about the Information Society
Start date - 01/2019 **End date - 07/2022**
Description – Reflect on issues pertinent to the Information Society, fostering an interdisciplinary internationalization policy through an annual seminar at UFSM. This entails increasing the number of professors with international experience and fostering an international interdisciplinary research group.

Activity 1 - Indicator 1
Type – Quantitative
Indicator - Interdisciplinary seminars
Current situation – 0
Goal for the 2nd year – 4
Final goal - 8

STRATEGIES

1. Strategy for the consolidation of existing international partnerships, as well as the construction of new partnerships and cooperation projects to increase the relationship between the Brazilian institution and research groups abroad.

UFSM maintains a reasonable number of cooperation agreements with national and foreign institutions. Currently, there are approximately 130 agreements in the diverse areas of knowledge, with activities involving teaching, research and extension and embracing innovation and technology transfer. The agreements are usually established for a period five years, based on the demands of researchers and professors and drafted as broad umbrella agreements to allow for the inclusion of other sectors of UFSM. Upon their establishment, they are associated to specific projects for teaching, research and extension, which are overseen by SAI through biennial reports. This accompaniment aims to maintain active and qualified international agreements and avoid their extinction. In addition, as mentioned in the Institutional Development Plan, there is a need to extend international cooperation and priority has been given to agreements with the countries with which Brazil has cultural and educational agreements, listed recently by Capes: Argentina, Australia, Austria, Canada, China, Denmark, Finland, France, Germany, India, Ireland, Italy, Japan, Mexico, New Zealand, Norway, The

Netherlands, The United Kingdom, The United States, Russia, South Africa, South Korea, Spain, Sweden and Switzerland. In order to achieve its educational mission and commitment to the integration and development of Latin America, UFSM is among the signatory institutions of the Asociación de Universidades Grupo Montevideu, which has enabled engagement in international research projects and academic-scientific dialog among faculty, staff and graduate and undergraduate students. This has resulted in the growth and increased quality of the graduate and undergraduate programs at the participating institutions. UFSM currently has 17 representative professors among the different academic committees, disciplinary groups and permanent commissions.

2. Strategy to attract foreign students to Brazil.

Each semester a call for application for student mobility programs is opened as a way of attracting foreign students to UFSM. The same number of spots offered to UFSM students at foreign institutions is offered to the foreign institutions for their students to come to UFSM. Approximately 100 opportunities are opened in this category each semester. In addition to these, there are also the spots offered in multilateral programs, such as AUGM and GCUB, which provide around 50 opportunities in the different programs each semester. To provide support for foreign students arriving at UFSM, we have recently implanted a housing unit to accommodate international students, as well as faculty and staff (InterHouse). The lodging consists of five townhouse units with two houses each. Each unit can comfortably accommodate 20 people, providing a total capacity of 100 occupants. The first unit is currently completed and available for occupation. In addition, due to the large demand, UFSM provides a grant to foreign students to cover the cost of rent and other expenses, besides providing meals at the university restaurant. This grant is offered to students from universities with specific reciprocal agreements, where UFSM sends the same number of students abroad. SAI has been working to transform UFSM into an internationalized environment. Recently, we have created new programs for foreign students, including the Host a Foreign Student program, International Friend program, Foreign Student Reception week and the International Club program, which aims to offer regular integration activities throughout the semester for both foreign and Brazilian students. Activities include excursions to tourist sites and regional cultural-historical locations and International Week, where foreign students can showcase their culture. In addition, SAI provides support to foreign students before, during and after their stay at UFSM.

3. Strategy to attract faculty and researchers with international experience.

Many of the same amenities offered to students are also available to professors, such as grants to cover living expenses and meals at the university restaurant through the AUGM Faculty and Staff Exchange programs and, in the near future, accommodations at the InterHouse. In addition, UFSM offers 35 positions for Foreign and National Visiting Professors, using its own budgetary resources. These positions pay a salary equivalent to that of full professor, with 4-year contracts for foreign professors and 2-year contracts for national professors. The main objective is to qualify strategic areas among the graduate programs. It also seeks to attract young foreign talent to participate in consolidated research groups. These activities contribute to the internationalization of scientific production and have led to increased publications in high impact journals, in addition to fostering the creation of new research groups and integrating researchers from UFSM and peers from other countries. UFSM also maintains a support program for publications in foreign languages. In addition, UFSM finances collaborative research laboratory activities, aiming to reduce costs and improve scientific research and collaboration. This action is reciprocal, with analyses performed in reciprocity with foreign laboratories. Finally, UFSM's image and achievements are publicized abroad through a number of channels of communication at foreign institutions, as well as at specialized fairs, such as NAFSA, in the U.S., EAIE, in Europe, and FAUBAI, in Brazil, among others.

4. Strategy to prepare the scholarship recipients for the period abroad as well as for their return, especially in order to increase the appropriation of knowledge by the institution.

UFSM supports internationalization of the graduate and undergraduate programs through the UFSM Institutional Program for Fostering International Integration, in line with the Institutional Development Plan. This program aims to support, foster and strengthen strategic partnerships with foreign institutions and is based in the principles of reciprocity and equality. The student and faculty mobility programs supported by this program are selected by the graduate or undergraduate program administration and should include an internal plan for joint research and collaboration. Faculty are

encouraged to participate in short and long-term courses in strategic areas. Graduate students should have completed their credits before participating in mobility programs or, in certain cases, may complete them at the foreign institution. The graduate research study should also be at an advanced stage to justify the exchange program for complementary analyses, classes or co-advising. UFSM provides foreign language classes through the Language Research and Teaching Unit (*Núcleo de Ensino e Pesquisa em Línguas*) and the Languages without Borders program, which offer traditional and distance courses at different levels in English, French, German, Italian, Spanish and Portuguese as a Foreign Language. To help facilitate mobility programs, UFSM also provides language proficiency tests, such as the Toefl IBT and ITP for English, Celpe-Bras for Portuguese as a Foreign Language, onSet for German and Celu for Spanish. SAI also provides logistics support for mobility programs, providing information related to legal immigration requirements, and carrying out meetings with mobility participants to provide information about travel and the countries and institutions that will be visited.

5. Describe innovative strategies that will be used by the institution that were not mentioned above.

UFSM had its first joint degree program in 2014, when Resolution n. 27 was implemented to regulate internal protocols for international cotutelle and joint degrees for master's and PhD degrees. This international academic modality allows students to supervised by two advisors, one in Brazil and the other in the foreign country. Upon completion, students are awarded degrees from both participating institutions. Since its implementation, UFSM has participated in nine joint degrees with institutions in countries such as France, Italy, Belgium and Spain and currently has many more in progress. In this modality, both advisors contribute to the student's development with periods of study at each institution previously established and in accordance with the time frames established in the resolution. The thesis or dissertation is defended on a single occasion at either of the institutions. Students must be regularly enrolled at their home institution and participating in a specific joint degree mobility program, established by an Agreement of Specific Interinstitutional Cooperation or an Addendum to an International Cooperation Agreement between UFSM and the foreign institution, in order for the diplomas to be validated. The Academic Cotutelle and Joint Degree Agreement should establish for each individual student a program containing: a list of activities to be developed, including the research project which will be carried out at each of the institutions; a list of activities that have already been completed at the institution of origin and/or at each of the institutions; the language(s) defined for publication of the thesis or dissertation; the defense presentation format, place and other pertinent details; and other specific academic requirements to be met by the student. The development of activities, both at UFSM and the foreign institution, must be at least 12 consecutive months for the PhD and 6 consecutive months for the Master's. The diploma will be awarded to students who meet the conditions stipulated by both graduate programs and in the Academic Cotutelle and Joint Degree Agreement. The academic transcripts will contain the name, number of credits and grade received for all classes taken, as well as attests to completion of all other specific curricular requirements. It must also contain the name of the academic cotutelle agreement, the name of the foreign institution and the period of study at that institution. It is obligatory: that there be an agreement of international cooperation between the foreign institution and UFSM; the UFSM course load and course requirements be fulfilled; and that the studies carried out at the foreign university present equivalency. The diploma will be awarded upon verification of legitimacy of the study program and the agreement of cooperation. Expansion of joint degree agreements is one of UFSM's strategic objectives. Countries listed by Capes that maintain cultural and educational agreements with Brazil will be prioritized: Argentina, Australia, Austria, Canada, China, Denmark, Finland, France, Germany, India, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Russia, Spain, South Africa, South Korea, Sweden, Switzerland, the United Kingdom and the United States.

POLICIES

1. Policy for the selection of foreign partners, considering that 70% (at least) of the resources should be earmarked for partnerships with institutions based on countries with which Capes maintains effective cooperation (listed in Annex I of the call).

Establish international bi- and multilateral agreements with renowned international institutions to develop reciprocal research activities. Agreements are regulated internally in accordance with Resolution n. 3 of 2008. Among the prioritized countries listed by Capes to expand international

cooperation with which UFSM has obtained promising results are The United States, Canada, Germany, Austria, France, Belgium, England, Sweden, Spain, Italy, Mexico and Switzerland, among the more than 130 active international agreements. In addition, the countries that participate in the AUGM program, especially Argentina, have been important partners and led to expressive results.

2. Grant policy and internal selection process for specific actions, within the funding lines of the Capes-PrInt program. In the case of cooperation projects with foreign institutions, the proposer should specify the application of funds, the plan of activities, reciprocal funding, academic mobility, technical - scientific production, counterparts in the partner institutions, among others.

The process of internal selection of graduate program internationalization proposals began with an internal call for projects to gauge the level of interest. This call established the possibility of participation for programs with scores from 4 to 7. Proposals should be submitted within a number of Priority Themes established based on the individual competencies of graduate programs. Participating groups should present proposals in the form of sub-projects, with no limit on the proposed activities, including the number of participants (individuals and graduate programs) and the funds requested. The proposal should contain: main thematic, developed based on the competencies of participants; Participant info: Name, ORCID registration number, department, graduate program; justification of participation and proof of foreign language proficiency; Description of teaching and research operational infrastructure for internationalization activities; History of teaching and research internationalization, with description of materials produced in a foreign language; proof of internationalization activities between participants involved and other foreign institutions. Proposed activities should cover a four-year period, beginning in the second semester of 2018 and ending in the first semester of 2022, and be ranked in terms of priority, with a description of their importance and the performance measures to be used.

3. Policy for hiring faculty with recognized scientific performance at an international level.

UFSM offers 35 positions for Foreign and National Visiting Professors, using its own budgetary resources. These positions pay a salary equivalent to that of full professor, with 4-year contracts for foreign professors and 2-year contracts for national professors. The main objective is to qualify strategic areas among the graduate programs. It also seeks to attract young foreign talent to participate in consolidated research groups. Another effective means is inviting foreign professors to participate in teaching, advising and research activities in graduate programs. There are a number of successful cases of laboratories at UFSM who received financial support from funding agencies to allow in situ collaboration, contributing to a rapid advance in the area of knowledge

4. Policy to increase proficiency in foreign languages for students, postgraduate faculty and technical staff that have direct participation with the proposed Internationalization Project.

UFSM has invested heavily to improve the language skills of its community through the Modern Foreign Languages Department and the Languages without Borders program of the Education Ministry. In this sense, in addition to regular classes in undergraduate and graduate courses, the department offers extracurricular classes and training in English for the entire university community. In addition, it has provided opportunities for students, faculty and staff to participate in Massive Open On-line Courses given in foreign languages, mainly English. The Languages without Borders program offers on-campus and distance classes in English, and as of recently, in Italian, French and German for students, faculty and staff. In addition, UFSM offers the TOEFL ITP and German language test OnSet, both free of charge, and is an application center for the TOEFL IBT. In addition, the group of Spanish language teachers has recently added new learning options, such as conversation groups which bring together Spanish language learners and native Spanish-speaking exchange students. Students, faculty and staff who will participate in mobility programs can also take English and Spanish classes to prepare for their exchange program. For foreign students who com to UFSM, there are regular Portuguese as a Foreign Language classes, in addition to preparatory classes for the Portuguese proficiency exam.

5. Policy of recognition of academic and scientific activities performed by faculty and students abroad.

UFSM has established a program for Flexibilization of Course Pedagogical Projects to allow flexibility in transferring credits from activities carried out at national and foreign institutions in accordance with the limits established in the internal legislation. In addition, UFSM adopts a system for publicity, selection and accountability of participants in order to select the best candidates to guarantee the best outcome possible. In this sense, mobility candidates must meet minimum foreign language requirements. Also, the admissibility of publishing scientific work, theses and dissertations in English also allows greater exploitation of mobility activities and greater dissemination among the international scientific community, thus, an important advance in internal regulations is to allow the use of foreign languages within the activities of graduate programs, including for publishing of results, theses and dissertations (Capes Resolution n. 7 of December 11, 2017).

6. Policy for hosting and supporting foreign faculty, researchers and students.

SAI's Reception Unit makes contact with future mobility participants in order to provide support before their trip to Santa Maria and is available to answer specific questions they may have. Students also receive a detailed guide containing information related to travel procedures, document requirements, means of transportation, lodging and other pertinent topics, in addition to videos about UFSM and Santa Maria. Upon arrival in Santa Maria, participants are welcomed by students or professors, through the Host a Foreigner Program or International Friend program. The Reception Unit also provides support throughout participants' stay in Santa Maria and upon their return to the home institution. Participants arrive for the Reception Week, one week before classes begin and have a number of integration activities, including Portuguese classes, a campus tour and a city tour. The recently created International Club strives to provide activities to integrate foreign participants and members of the UFSM community throughout the semester, with regular get-togethers as well as excursions to tourist and historical-cultural sites in the region. One of the highlights of the International Club is the International Week, when foreign students are invited to showcase cultural aspects of their home country and home institution at an international fair. During this week, special international meals are provided by the university restaurant and international films are shown to represent the countries of foreign students at UFSM. Consular representatives from these countries are invited to participate in the opening ceremony. UFSM is endowed with a special accommodation for international visitors, called the Interhouse, located on the central campus. Construction of two of the five planned units has been completed. This lodging will be managed by SAI, with support from the Tourism Course. Another action that is in the planning stage is the creation of multilingual signs throughout the campus and adaptation of services and infrastructure support to facilitate internationalization activities.

7. Policy for the appropriation of the knowledge and experience acquired abroad by the beneficiaries of the Institutional Internationalization Project.

Today, UFSM has a formal rather than normative policy for appropriating knowledge gained from mobility programs upon the return of faculty, students and staff. In the case of faculty and staff, this includes the completion of a report and presentation of travel documents to certify the activities carried out. Students present a report, which although characterized as a public document, is not circulated among the units. Therefore, UFSM henceforth establishes a policy for appropriation of knowledge in official mobility programs for faculty, staff and students that includes the presentation of a written report, with detailed information on the activities carried out and a description of objectives achieved and not achieved during the program. For participation in fairs, expositions, courses, seminars, among others, a public presentation within the department should be made, followed by online publication of the report, which should be previously analyzed by the immediate supervisor, in the case of faculty and staff, or the advisor or course coordinator in the case of students. For joint degrees, the thesis or dissertation should be presented at the institution with an exposition open to the public interested in the theme.

8. Policy for management and operationalization of the Institutional Internationalization Project.

Management and operationalization of the Institutional Internationalization Project (IIPR) will be geared towards meeting the following immediate needs: enhancement of the physical structure of SAI; organization and financing means of internationalization of scientific production; promoting a culture of internationalization among students, professors, research groups and graduate programs;

organization of routines and norms to facilitate and encourage internationalization; inclusion of support and incentives as positive evaluation criteria in calls for projects and selection processes for graduate programs; stimulating production and dissemination of information in English, such as CVs, technical laboratory information, offer for admissions and hiring, etc.; offering a portion of the graduate and undergraduate courses in English; fostering joint international activities, such as courses in the COIL network; enhancing SAI's Language and Translation Unit and the Languages without Borders program; creating an internationalization unit within the Provost Office for Graduate Studies and Research.

9. Policy for monitoring and internal evaluation of the goals of the Institutional Internationalization Project.

The supervision and internal evaluation of goals and performance of the IIPR will entail monitoring a number of performance indicators, which are listed in the appendix of the IDP. These indicators were published as an initial list to be developed and fleshed out as measures of performance of institutional development over the next ten years. These include: Percentage of international publications; Percentage of international co-authorship; Number of international events promoted; Number of citations by international researchers; Number of journals internationally indexed; Number of international Memoranda of Understanding (MOU); Number of partner countries with MOU; Number of faculty in mobility programs (IN and OUT); Number of students in mobility programs (IN and OUT); Percentage of classes offered in English; Percentage of faculty with international publications; Percentage of faculty with international co-authorship.

10. Policy for the conciliation of national development programs supported by Capes to the internationalization effort.

In parallel to the Capes PrInt program, funding from other sources will also be utilized: CNPq funding through the following programs: CNPq-TWAS, PROFOR, PDJ, PDS, IsF, SETEC, MARCA, Abdias Nascimento, GRICES, PDPP, PACCSS and PDV; Capes funding through the programs: PEC-PG, CsF, PDSE, Senior Internship Program, PVE, AEX, Doctorate abroad Program, Post-Doctorate Program, Fundação Carolina, PLI, PDPI, IPDP, PNPD, COFEN, among others; Intensification of participation in projects financed by institutions such as: Wageningen, DAAD, Unibral, Probral, Humboldt, Newton Fund, FCT, Brafagri, Brafitec, Cofecub, Bragecrim, Bragfost, Nottingham-Birminghan, GTA, SIU, DGPU, Nuffic, STINT, WBI, Branetec, NoPA, DGU, Agropolis, Weizmann, INL, IIASA and JSPS, among others. Funding from international programs, such as: DFAIT, Fulbright, MITACS, TAMU, FIPSE, DFATD, NIH and NSF, MINCCyT, MES, AUGM, AULP, BRICS, CAFP, CAPG, Math AmSud, Pro-Haiti, SECyT, COICciencias and PIFC, among others such as the regional Fapergs Foundation.

11. Describe here other innovative policies that will be adopted by the institution that were not addressed before in the above items.

In 2001, UFSM created the Center for Intellectual Property, affiliated with the PRPGP, which aimed to protect knowledge generated by members of the university community. In 2005, it was given the name Center of Innovation and Technology Transfer (Núcleo de Inovação e Transferência de Tecnologia-NIT), with a redefinition of its mission and objectives. In March 2015, NIT was replaced by the Agency for Innovation and Technology Transfer (Agittec), whose purpose is to integrate management of intellectual property, entrepreneurship and technology transfer at UFSM. Agittec aims to increase institutional initiatives designed to disseminate entrepreneurial education and culture, strengthen technology transfer with a focus on university-business relationships and protect knowledge and technologies created by the university community. Agittec's mission is to promote entrepreneurship and to protect scientific knowledge, transforming it into sustainable development. Its vision is to be recognized as an agency of excellence in the diffusion of entrepreneurial culture, in the transfer of technology and in the protection of knowledge. In that context, it upholds the following values for its actions: innovation, knowledge, ethics, regional development, creativity and proactivity. The interaction between research groups and businesses in research and technological innovation is promoted and operationalized by Agittec, with financial management of technical activities handled by the Foundation of Support for Technology and Science (Fatec), affiliated with UFSM.

FURTHER INFORMATION

1. **Number of postgraduate courses taught in English between 2013 and 2016.**
   Quantity of courses: 20

2. **Number of joint supervision postgraduate programs between 2013 and 2016.**
   Quantity of programs: 10

3. **Number of double degree postgraduate programs between 2013 and 2016.**
   Quantity of programs: 6

4. **Number of bilateral postgraduate programs between 2013 and 2016.**
   Quantity of programs: 7

5. **Number of products derived from research projects and contributions to international databases between 2013 and 2016.**
   Quantity of products and contributions: 8

6. **Number of Capes' development programs from which the institution benefited between 2013 and 2016.**
   Quantity of programs: 15

7. **Number of Capes' international cooperation projects from which the institution benefited between 2013 and 2016.**
   Quantity of projects: 17

8. **Insertion of materials, themes and subjects in foreign language in the postgraduate program curricular structure.**

Description: Forty percent of the graduate programs at the Federal University of Santa Maria offer some courses in a foreign language and more than 60% of the programs with Capes evaluation grades of 5, 6 and 7 offer at least one course in a foreign language. In addition, approximately 95% of the programs use foreign language materials in their curricula. All of the programs have seminars on interpretation and discussion of scientific papers in a foreign language. The need for a multilingual teaching environment within the graduate programs is one of the main goals of the university internationalization policy and is highlighted in its two main guiding documents: the Institutional Development Plan and the Internationalization Plan, both approved by the University Council. Therefore, the main goals for the next 4 years are: to reach 100% of programs with a Capes evaluation grades of 4 or higher and at least 1 course offered in a foreign language; have at least one course offered in a foreign language for each line of research in the programs with a Capes evaluation grades of 5 or higher. This would yield an increase to approximately 90% of programs with subjects offered in a foreign language. The internationalization policy of UFSM also expects all programs with a Capes score of 4 or higher to utilize teaching materials and scientific themes in a foreign language. Internal policies to achieve these goals have been developed, for instance, establishing a framework for collaborative research with international research groups, modernizing the technological structure for research, providing financial incentives for programs through the development of an Institutional Fund for Internationalization of Graduate Programs and providing resources for training courses and courses in foreign languages.

EXPECTED BENEFITS

Theme 1: One Health

INTERNATIONAL COOPERATION PROJECTS

Name of the project: Pharmacological and nutritional strategies for health promotion
Start date: 01/01/2019 **End date: 31/07/2022**

Description: One Health, addressed in an interdisciplinary way, reflects the inseparable union between animal, human and environmental health. In this sense, looking at the whole becomes critical to ensure excellent levels of health. This project includes two thematic lines, one related to health promotion, addressing chronic diseases of high prevalence in the population, and another related to toxicological safety. UFSM has qualified Graduate Programs (GP) working in this area, namely, the GP in Toxicological Biochemistry (score 6), GP in Pharmacology (score 5) and GP in Pharmaceutical Sciences (score 5). The association of these programs in a single project will allow the coordinated development of internationalization actions in these related areas, including understanding the mechanisms involved in the pathologies as well as the discovery of new drugs and pharmaceutical formulations. Recent strategies in health promotion require a multidisciplinary approach, which also includes aspects related to nutrition, well-being and life quality, which are determining factors in reducing disease risk and treatment success. In this sense, UFSM has qualified researchers within the GP in Food Science and Technology (score 4), acting in the area of bioactive compounds applied as a nutritional strategy in reducing the risk of chronic diseases affecting the population. It is essential that the scientific advances obtained in this theme be converted, as soon as possible, into benefits for the population. In this way, this project seeks to stimulate a new understanding of reality by articulating elements that go between, beyond and across disciplines, searching to understand this complex theme. Thus, a multidisciplinary vision is proposed, starting from the synthesis of useful molecules (basic science, industry and health) to undertaking sustainable attitudes (education, society and culture). The researchers of the GPs in Visual Arts and Education and Science of UFSM will contribute to broaden the vision and articulate with regards to concepts restricted to each field of knowledge. A multidisciplinary vision will contribute to the activities of popularization of science and dissemination of knowledge generated within the scope of this project for the benefit of the community.

Work missions related to the cooperation project

Year	Quantity	Amount
2022	14	R$ 475.400,00
2019	14	R$ 475.400,00
2020	16	R$ 515.400,00
2021	16	R$ 521.955,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2022	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2021	Young Talent with Experience Abroad (12 months)	3	R$ 348.331,74
2019	Visiting Professor in Brazil (15 days)	7	R$ 113.087,03
2021	Sandwich PhD (6 months)	12	R$ 485.740,80
2020	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2020	Visiting Professor in Brazil (15 days)	7	R$ 113.087,03
2019	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2019	Post-doctorate with experience abroad (12 months)	3	R$ 207.931,74

2019	Sandwich PhD (6 months)	12	R$ 485.740,80
2019	Young Talent with Experience Abroad (12 months)	2	R$ 232.221,16
2021	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2020	Post-doctorate with experience abroad (12 months)	3	R$ 207.931,74
2022	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2020	Sandwich PhD (6 months)	12	R$ 485.740,80
2020	Young Talent with Experience Abroad (12 months)	3	R$ 348.331,74
2021	Post-doctorate with experience abroad (12 months)	3	R$ 207.931,74
2022	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87
2021	Visiting Professor in Brazil (15 days)	7	R$ 113.087,03
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2022	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2022	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2022	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29

Name of the project: Animal health and welfare
Start date: 01/01/2019 End date: 31/07/2022
Description: The concept of one health is increasingly popular and has always been the focus of projects related to Animal Health of the Graduate Program in Veterinary Medicine of UFSM (score 7), which has qualified researchers with a great degree of international collaboration working in the area of Animal health and welfare. This project contemplates two main lines, one related to welfare and another related to biotechnology applied to reproduction and animal welfare. We intend to construct and test different vaccine vectors from RNA viruses (flavivirus, arterivirus) and DNA (herpesviruses, poxviruses), evaluating their suitability for use as a vector, selective deletion of non-essential genes and measurement of their effects, including innocuousness and immunogenicity in laboratory animals and species of interest. We intend to obtain vector platforms for the propagation of genes of pathogens of interest in veterinary medicine. The availability of effective and safe vaccines for diseases of health concern will have a notable impact on animal health, with direct effects on the productivity and economic performance of the sector. Likewise, safe and effective vaccines against zoonotic diseases will have a significant impact on human health. Regarding the second line of the project, a number of reproductive biotechnologies has been incorporated into animal selection programs for genetic increase, including artificial insemination, estrus synchronization, embryo transfer, cryopreservation of gametes and embryos, and, more recently, assisted selection based on DNA markers. Other technologies, such as reproductive cloning by nuclear transfer and transgenics, are in the stage of improvement and, despite their great potential, have not yet been incorporated into animal production and selection systems due to efficiency and / or regulation. Advances in genomics, molecular biology and bioinformatics have enabled the creation of technologies to promote genomic editing in a specific, effective and simple way, which were unimaginable until recently. These new technologies have generated great expectation about the potential impact on different segments of animal production. For example, the genomic editing has the potential to revolutionize current methods of genetic selection, as it enables animal breeding with adjustment of multiple characteristics, including productive, sanitary, environmental and animal welfare attributes. In addition, animal reproductive studies may allow advances in the resolution of reproductive diseases in humans through a

translational approach. This project will result in products and processes capable of intellectual protection and with high potential for industrialization.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	4	R$ 131.126,00
2020	4	R$ 131.126,00
2021	4	R$ 131.126,00
2022	4	R$ 131.126,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2021	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2022	Visiting Professor in Brazil (15 days)	1	R$ 16.155,29
2021	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2020	Sandwich PhD (6 months)	3	R$ 121.435,20
2021	Sandwich PhD (6 months)	3	R$ 121.435,20
2020	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2019	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2019	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2020	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2020	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2019	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2022	Sandwich PhD (6 months)	2	R$ 80.956,80
2019	Sandwich PhD (6 months)	3	R$ 121.435,20
2022	Visiting Professor in Brazil (15 days)	1	R$ 16.155,29
2022	Sandwich PhD (6 months)	1	R$ 40.478,40

Work missions not related to the cooperation project

Year	Quantity per year	Amount
2020	1	R$ 25.466,00
2022	1	R$ 25.466,00
2021	1	R$ 25.466,00
2019	1	R$ 25.466,00

Scholarships not related to the cooperation project

Year	Modality	Quantity	Amount
2019	Training (3months)	2	R$ 50.932,80
2020	Training (3months)	2	R$ 50.932,80

2021	Training (3months)	2	R$ 50.932,80
2022	Training (3months)	1	R$ 25.466,00

Theme 2: Sustainability and intelligent attitudes

INTERNATIONAL COOPERATION PROJECTS

Name of the project: Sustainable Ecosystems
Start date: 01/08/2018 End date: 30/06/2022
Description: Intended internationalization activities include conducting shared research between international groups and institutions, activities of teaching, researching, communication and dissemination at a global level. The proposal is organized in three themes: Rational use of ecosystems and their insertion in the production process and environmental protection; biological processes, functions and values of pastoral ecosystems; Evolutionary ecology and conservation of the Brazilian biota. The activities will be focused on disseminating and establishing synergy and / or complementarity with other international teams working in areas of common interest, including: Evaluation, development and implementation of technologies for sustainable production in ecosystems; Development of research and technologies applied to the management of ecosystems seeking the recovery, conservation and insertion in the production processes; Determination of the taxonomic identity and evolutionary origins of specific species and ecological associations that create areas of endemism in the Brazilian biomes; Inferring of specific and directional effects of climate change on endemic taxa of Brazilian biomes through the modeling of the niche of both focal biomes and of the species selected for study; Identification of the most appropriate areas with natural environments where conservation efforts should be focused (including the creation of new protection areas); Investigation of the population dynamics of invasive species and determine their effect on natural communities; Understanding of the factors that shaped the composition of natural communities in Brazilian biomes, as well as in the transitional areas between them.

Work missions related to the cooperation project

Year	Quantity	Amount
2020	5	R$ 245.860,00
2019	5	R$ 245.860,00
2022	2	R$ 98.344,00
2021	4	R$ 196.688,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Ano	Modalidade	Quantidade	Valor Total
2019	Sandwich PhD (6 months)	8	R$ 323.827,20
2021	Sandwich PhD (6 months)	8	R$ 323.827,20
2020	Young Talent with Experience Abroad (12 months)	2	R$ 232.221,16
2022	Young Talent with Experience Abroad (12 months))	1	R$ 116.110,58
2020	Sandwich PhD (6 months)	8	R$ 323.827,20
2021	Visiting Professor in Brazil (15 days)	5	R$ 80.776,45
2022	Visiting Professor in Brazil (15 days)	4	R$ 64.621,16

2019	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2020	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2021	Senior Visiting Professor Abroad (12 months)	3	R$ 369.230,40
2020	Visiting Professor in Brazil (15 days)	5	R$ 80.776,45
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2020	Post-doctorate with experience abroad (12 months)	2	R$ 138.621,16
2019	Professor Visitante no Brasil (15 dias)	4	R$ 64.621,16
2021	Post-doctorate with experience abroad (12 months)	2	R$ 138.621,16
2022	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2019	Post-doctorate with experience abroad (12 months)	2	R$ 138.621,16
2019	Young Talent with Experience Abroad (12 months)	2	R$ 232.221,16
2021	Young Talent with Experience Abroad (12 months)	2	R$ 232.221,16
2022	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80

Name of the project: Agriculture - innovative, intensive and sustainable
Start date: 01/08/2018 **End date: 31/07/2022**
Description: Nowadays, innovative, intensive and sustainable agriculture is more than a project of research groups or institutions, it is a policy of international organisms to promote science and human development and of nations striving to intensify the quality and production of healthier foods and reduce post-harvest losses to reduce hunger for a population that will reach 10 billion people by the year 2050. This is a major challenge as the increase in food production must be accompanied by a reduction in environmental degradation and in a scenario of global climate change. Brazil, one of the world's major food producers, has the obligation to develop science and technology in order to participate in the solution and in worldwide opportunities related to food security. Otherwise, Brazil may increase its technological dependence and be a mere buyer of technological packages developed by multinationals in other countries. The proposed theme of Agriculture - Innovative, intensive and sustainable is an international effort to develop innovative solutions based on biodiversity, molecular biology, genomics, bioinformatics, modeling and microbiology that allow increased food production with reduced environmental impact, in a scenario of climate change. It seeks to replace expensive and polluting technologies, such as the indiscriminate use of pesticides and chemical fertilizers, by biotechnologies based on the differential expression of genes, protection of plants by bioproducts and microorganisms, use of plant growth modeling, post harvest conservation, reduction of food losses and the prediction of climatic scenarios and its impact on the biology of micro-organisms, plants and animals and agriculture in general. Internationalization is seen as strategy for the group to acquire new capacities and contribute to solving the great challenges of food production in an intensive and sustainable way. In the last 6 years the proponents have published 248 international articles, of which 110 were produced with foreign collaborators.

Work missions related to the cooperation project

Year	Quantity	Amount
2022	2	R$ 52.502,00
2021	9	R$ 234.486,00
2019	6	R$ 157.508,00
2020	6	R$ 157.508,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2019	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2022	Sandwich PhD (6 months)	3	R$ 121.435,20
2021	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2021	Sandwich PhD (6 months)	3	R$ 121.435,20
2021	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2022	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2020	Senior Visiting Professor Abroad (12 months)	2	R$ 246.153,60
2021	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2020	Sandwich PhD (6 months)	3	R$ 121.435,20
2019	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2019	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2021	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2022	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2019	Sandwich PhD (6 months)	3	R$ 121.435,20
2020	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2019	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2020	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58

Name of the project: Soils - Production and preservation of the environment
Start date: 01/01/2019 End date: 31/07/2022
Description: The Soil Science graduate program presents a proposal for the implementation and consolidation of strategic internationalization plans, based on the theme "Soils: production and preservation of the environment". Strategically, the internationalization project aims to qualify its activities of teaching, research and technological development, with the purpose of overcoming some of the great challenges of humanity such as the production of food and conservation of natural resources (soil, water and biodiversity). The production of the absolute majority of the food of vegetal and animal origin, of the fibers used in clothing and of the biofuels takes place directly or indirectly in the soil. Soil Science has a major mission until the year 2050, which is to sustain the production of these consumables for a population of approximately 10 billion people. At the same time, the world's arable land is being reduced at an accelerated pace due to its misuse, and natural ecosystems should not be incorporated into production systems to preserve the environment. So the production has to be larger, in smaller areas and without causing degradation of the soil and the environment. Besides its productive function, soil is also fundamental for the maintenance of the planet, as it participates in many processes of global importance, such as the hydrological cycle, the emission or capture of

greenhouse gases, the maintenance of the largest fraction of the planet's biodiversity, the retention and transformation of most of the pollutants generated in the world, the modulation of the temperature of the atmosphere and the hydrosphere, among others. Therefore, whenever soil is used improperly there are damages to this soil, to the processes mentioned above and to the planet as a whole. It is in this aspect that this internationalization project assumes a strategic role in the Soil Science graduate program, facilitating the exchange of knowledge with leading research institutions in the world, integrating knowledge in the search for new technologies and qualifying the training of human resources in Brazil.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	6	R$ 150.000,00
2020	5	R$ 125.000,00
2021	6	R$ 150.000,00
2022	4	R$ 100.000,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2022	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2019	Sandwich PhD (6 months)	2	R$ 80.956,80
2020	Junior Visiting Professor Abroad (12 months)	1	R$ 113.716,80
2021	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2020	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2022	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2020	Sandwich PhD (6 months)	2	R$ 80.956,80
2021	Junior Visiting Professor Abroad (12 months)	1	R$ 113.716,80
2020	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2021	Sandwich PhD (6 months)	2	R$ 80.956,80
2019	Senior Visiting Professor Abroad (12 months)	1	R$ 123.076,80
2020	Visiting Professor in Brazil (15 days)	6	R$ 96.931,74
2019	Junior Visiting Professor Abroad (12 months)	1	R$ 113.716,80
2019	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58

Name of the project: Energy Resources
Start date: 01/01/2019 **End date: 30/06/2022**
Description: This project proposes internationalization actions in Energy Resources, viewing the increase in the interaction with international institutions of excellence in the area, the implantation of a multi-user laboratory of international reference, the training of qualified human resources and the dissemination of knowledge about energy resources in society. This project will foster research and development to analyze the impact of the connection of distributed resources in the planning, operation, maintenance and protection of power systems, including the potential of intelligent power grids and the development of alternative sources. It will also promote studies involving weather and climate aspects related to energy and environmental resources, mainly regarding the generation of electricity by renewable sources. Another research topic is related to energy efficiency, an indispensable item when it comes to the use of energy from alternative sources, since a more conscious use avoids the need to increase its production. In this way, we hope to contribute with the technological developments of the national productive chain facing the challenges of market and society.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	6	R$ 196.690,00
2020	6	R$ 196.690,00
2021	6	R$ 196.690,00
2022	4	R$ 131.126,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2020	Visiting Professor in Brazil (15 days)	7	R$ 113.087,03
2019	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2020	Senior Visiting Professor Abroad (3 months)	3	R$ 119.599,20
2021	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2019	Visiting Professor in Brazil (15 days)	9	R$ 145.397,61
2019	Senior Visiting Professor Abroad (3 months)	3	R$ 119.599,20
2022	Sandwich PhD (6 months)	5	R$ 202.392,00
2021	Training (3 months)	1	R$ 25.466,40
2022	Visiting Professor in Brazil (15 days)	5	R$ 80.776,45
2021	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2020	Sandwich PhD (6 months)	6	R$ 242.870,40
2021	Sandwich PhD (6 months)	6	R$ 242.870,40
2021	Visiting Professor in Brazil (15 days)	7	R$ 113.087,03
2021	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29

2019	Sandwich PhD (6 months)	7	R$ 283.348,80
2019	Training (3 months)	1	R$ 25.466,40
2022	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2020	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58

Work missions not related to the cooperation project

Year	Quantity per year	Amount
2022	1	R$ 25.466,00
2019	1	R$ 25.466,00
2020	1	R$ 25.466,00
2021	1	R$ 25.466,00

Scholarships not related to the cooperation project

Year	Modality	Quantity	Amount
2019	Training (3months)	2	R$ 50.932,80
2020	Training (3months)	2	R$ 50.932,80
2021	Training (3months)	2	R$ 50.932,80
2022	Training (3months)	1	R$ 25.466,00

Theme 3: Tomorrow's materials and clean technologies

INTERNATIONAL COOPERATION PROJECTS

Name of the project: Smart Materials
Start date: 01/08/2018 End date: 31/07/2022
Description: New materials are pillars for the development of humanity, acting as a vehicle for the propagation of scientific and technological changes. These materials have penetration in several segments in industry, in human health, in the development of new sectors and in the activities and processes of production. The creation of new materials promotes the development of the technologies of the future and contributes to the improvement of life quality. This research project focuses on the consolidation of NUDEMA in UFSM as a reference center for the development and characterization of materials with wide application in different areas of knowledge and potential of generating products. The conception of NUDEMA represents the interest of several researchers in catalyzing multi- and interdisciplinary activities, transversally unifying several areas of study related to advanced materials, those in which the advance of knowledge of production / manufacturing processes and properties is still pungent, and of extreme relevance for the quality of life and national sovereignty. This initiative strengthens the availability of existing equipment, adding to the multi-user infrastructures and equipments already implanted with previous financing and should encourage the availability of other equipment by improving the local conditions to be implemented and offered The new materials that we intend to develop involve magnetic materials, ferromagnetic nanostructures, development of spintronic devices, new ceramics with application in dentistry, nanostructured functional materials with applications in devices based on spintronics, polymer nanoparticles with applications in nanomedicine, bioindicator and nanoadsorvent materials, as well as the study of the properties of nanomaterials using computational simulation based on quantum mechanics. This project will lead to the construction of new international partnerships and the consolidation of the existing ones with the aim of becoming a reference in the area of new materials. In addition, the relations established during the project will allow the attraction of foreign students and researchers to Brazil, increasing the interactions between UFSM and research centers in Europe and the USA.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	4	R$ 131.126,00
2020	3	R$ 98.345,00
2021	4	R$ 131.126,00

2022	3	R$ 98.345,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2022	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2019	Senior Visiting Professor Abroad (3 months)	3	R$ 119.599,20
2020	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2019	Sandwich PhD (6 months)	4	R$ 161.913,60
2020	Sandwich PhD (6 months)	4	R$ 161.913,60
2021	Sandwich PhD (6 months)	4	R$ 161.913,60
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2020	Young Talent with Experience Abroad (6 months)	2	R$ 118.310,58
2022	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2019	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87
2020	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2021	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87
2020	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2021	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2019	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2021	Senior Visiting Professor Abroad (3 months)	3	R$ 119.599,20
2019	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58
2020	Post-doctorate with experience abroad (6 months)	3	R$ 107.265,87
2019	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2022	Post-doctorate with experience abroad (6 months)	3	R$ 107.265,87
2021	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2022	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2021	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58

Name of the project: Clean Technologies
Start date: 01/08/2018 End date: 31/07/2022
Description: This project has as main focus the development of technological tools for the improvement of processes, products, services, as well as organizational and management procedures, with the main objective of reducing or eliminating environmental impact. Clean

technologies (also known as "green" or sustainable technologies) are increasingly present in daily life, being considered important government and state policies in several developed countries (e.g. the United States, Canada, Switzerland, Germany, others). Due to the dynamic nature of progress, promptly replicable technical solutions and programs and projects that promote improved environmental performance of institutions have been sought, culminating in the adoption of clean technologies. Concepts such as Pollution Prevention (P2), Cleaner Production (CP), Ecodesign, Ecoefficiency and Design for Recycling (DfR) have been pursued, among others consolidated in developed countries and partners in this project, but still require improvement in Brazil. In this sense, several UFSM research groups, especially in the areas of Chemistry and Engineering, have studied alternative processes which are in line with the principles of clean technologies. This project aims to operate in lines focused on the reduction of unitary operations, water consumption, energy and effluent generation, use of alternative technologies such as ultrasound, microwave and ultraviolet for the improvement of processes, materials or products; assurance of the reliability of the methods of analysis for the quality control of products and processes, through the certification of laboratories and tests, among other actions. As a way to enable these actions and needs, scientific exchange activities (study missions at all levels) and collaborative publications will be developed with the participation of researchers from countries such as Australia, Austria, Belgium, Canada, China , Scotland, United States, France, India, Ireland and Italy.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	3	R$ 98.345,00
2020	4	R$ 131.126,00
2021	3	R$ 98.345,00
2022	4	R$ 131.126,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2019	Senior Visiting Professor Abroad (3 months)	1	R$ 39.866,40
2020	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2019	Sandwich PhD (6 months)	4	R$ 161.913,60
2021	Sandwich PhD (6 months)	4	R$ 161.913,60
2019	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87
2019	Young Talent with Experience Abroad (6 months)	2	R$ 118.310,58
2020	Sandwich PhD (6 months)	4	R$ 161.913,60
2019	Post-doctorate with experience abroad (6 months)	3	R$ 107.265,87
2020	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58
2020	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2022	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2021	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87

2022	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58
2021	Young Talent with Experience Abroad (6 months)	2	R$ 118.310,58
2022	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87
2022	Young Talent with Experience Abroad (6 months)	2	R$ 118.310,58
2021	Post-doctorate with experience abroad (6 months)	3	R$ 107.265,87
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2021	Senior Visiting Professor Abroad (3 months)	1	R$ 39.866,40
2020	Visiting Professor in Brazil (15 days)	3	R$ 48.465,87

Name of the project: Nanomaterials
Start date: 01/08/2018 End date: 31/07/2022
Description: This project aims to carry out research on the synthesis of model molecules of neutral organic compounds, metallic complexes, ionic liquids and interlaced molecules (molecular machines) in liquid or crystalline phase for the study of self - organized supramolecular systems (SS). The research group proposes a platform of studies in the areas of Chemistry of Supramolecular Systems (QSS), aiming to answer some fundamental questions, particularly, for Chemistry: What are the steps and the processes that take from the individual molecule to the material? How and why does matter become complex? Or, what is the path taken by the molecule to the entities of the highest complexity? In this sense, UFSM research groups have been working on the synthesis of model molecules of neutral organic compounds, metallic complexes, ionic liquids and interleaved molecules (molecular machines) for the study of self-organized supramolecular systems (SS). These systems are mono- and multicomponent, such as monocomponent crystals, polymorphs, solvates, cocrystals, and mixed systems. The studies aim at the understanding of geometric data, topological data and energetic data of the interactions that keep the molecules aggregated. This opens up innovative perspectives with a complex SS approach to finding answers to the questions mentioned above. One of the main consequences in this type of conception is to highlight the need to expand the Scientific Method beyond its borders, requiring the inclusion of knowledge from the Human Sciences. Thus, within the scope of this project, specific objectives and actions will be developed to increase the group's scientific and technological production of quality; improvement in the quality of scientific production through publication in periodicals with high impact factor; collaboration in scientific projects with researchers from abroad; improvement in the training of human resources by increasing the number of sandwich doctorate internships in centers of excellence abroad; implementing scientific exchange between our research group and research groups abroad.

Work missions related to the cooperation project

Year	Quantity	Amount
2019	4	R$ 131.126,00
2020	4	R$ 131.126,00
2021	4	R$ 131.126,00
2022	4	R$ 131.126,00

Resources for project maintenance

Year	Amount
2018	R$ 10.000,00
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2022	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2021	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2021	Sandwich PhD (6 months)	3	R$ 121.435,20
2022	Sandwich PhD (6 months)	3	R$ 121.435,20
2022	Visiting Professor in Brazil (15 days)	1	R$ 16.155,29
2022	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2021	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2022	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2019	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2021	Visiting Professor in Brazil (15 days)	1	R$ 16.155,29
2021	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2020	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2020	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2021	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2019	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2019	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2019	Visiting Professor in Brazil (15 days)	1	R$ 16.155,29
2020	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2020	Sandwich PhD (6 months)	3	R$ 121.435,20
2019	Junior Visiting Professor Abroad (3 months)	1	R$ 36.986,40
2022	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2020	Senior Visiting Professor Abroad (3 months)	2	R$ 79.732,80
2020	Young Talent with Experience Abroad (6 months)	1	R$ 59.155,29
2019	Sandwich PhD (6 months)	3	R$ 121.435,20

Work missions not related to the cooperation project

Year	Quantity per year	Amount
2022	1	R$ 25.466,00
2019	1	R$ 25.466,00
2020	1	R$ 25.466,00
2021	1	R$ 25.466,00

Scholarships not related to the cooperation project

Year	Modality	Quantity	Amount
2019	Training (3months)	2	R$ 50.932,80
2020	Training (3months)	2	R$ 50.932,80

2021	Training (3months)	2	R$ 50.932,80
2022	Training (3months)	1	R$ 25.466,00

Theme 4: Information society: memory and technologies

INTERNATIONAL COOPERATION PROJECTS

Name of the project: Memory and technologies
Start date: 01/01/2019 End date: 31/07/2022
Description: This international cooperation project emphasizes issues related to memory within the Information Society and the different technologies used for its collection, storage, retrieval and dissemination. A central concern in this project is the examination of technologies that promote sustainable development. In contemporary society memory presents itself in different types, such as cultural memory, social memory, labor memory and ecological memory. It is also expressed in different forms, whether in the visible aspect of urban and rural landscapes, in the memory of farmers, or in the form of Centers of Documentation and Memory and the treatment of their physical and digital archives. The project also aims at examining conceptual issues such as the nature and role of memory in the acquisition and transmission of human knowledge.

Work missions related to the cooperation project

Year	Quantity	Amount
2022	9	R$ 152.250,00
2021	5	R$ 103.805,00
2020	10	R$ 229.179,00
2019	9	R$ 160.910,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2021	Junior Visiting Professor Abroad (3 months)	4	R$ 147.945,60
2021	Visiting Professor in Brazil (15 days)	15	R$ 242.329,35
2022	Visiting Professor in Brazil (15 days)	6	R$ 96.931,74
2021	Sandwich PhD (6 months)	7	R$ 283.348,80
2019	Young Talent with Experience Abroad (6 months)	2	R$ 118.310,58
2020	Visiting Professor in Brazil (15 days)	18	R$ 290.795,22
2019	Sandwich PhD (6 months)	13	R$ 526.219,20
2020	Post-doctorate with experience abroad (6 months)	1	R$ 35.755,29
2020	Junior Visiting Professor Abroad (3 months)	4	R$ 147.945,60
2019	Visiting Professor in Brazil (15 days)	2	R$ 32.310,58
2021	Senior Visiting Professor Abroad (3 months)	4	R$ 159.465,60
2020	Young Talent with Experience Abroad (6 months)	4	R$ 236.621,16

2019	Post-doctorate with experience abroad (6 months)	2	R$ 71.510,58
2020	Sandwich PhD (6 months)	8	R$ 323.827,20
2022	Sandwich PhD (6 months)	4	R$ 161.913,60
2022	Senior Visiting Professor Abroad (3 months)	1	R$ 39.866,40
2020	Senior Visiting Professor Abroad (3 months)	8	R$ 318.931,20
2019	Senior Visiting Professor Abroad (3 months)	7	R$ 279.064,80

Name of the project: Information and technology
Start date: 01/01/2019 End date: 31/07/2022
Description: This project emphasizes issues of information in the scope of the Information Society and the technologies that promote its collection, storage, retrieval and diffusion. The Information Society– a globalized society by virtue, among other factors, of its social organization structured in digital networks whose transactional processes of management depend strongly on this technology– requires a consideration of means of production, circulation and consumption of information, striving towards a more just society. One aim of this project is to critically examine the information media used in agricultural and food systems, striving to improve relations between the rural and urban areas. Another aim is to reflect on image reproduction technologies and, based on these technologies, reflect on the co-dependence between art and information technologies. In this sense, we aim to reflect on the relations between art and ecology, mediated by information technologies. Finally, the project aims to examine conceptual issues, such as the nature of information and its relations with notions of logic, epistemology and semantics.

Work missions related to the cooperation project

Year	Quantity	Amount
2021	4	R$ 98.021,00
2022	9	R$ 158.328,00
2020	4	R$ 112.442,00
2019	8	R$ 170.330,00

Resources for project maintenance

Year	Amount
2019	R$ 10.000,00
2020	R$ 10.000,00
2021	R$ 10.000,00
2022	R$ 10.000,00

Scholarships related to the cooperation project

Year	Modality	Quantity	Amount
2019	Senior Visiting Professor Abroad (3 months)	1	R$ 39.866,40
2019	Visiting Professor in Brazil (5 months)	1	R$ 80.755,29
2021	Sandwich PhD (6 months)	5	R$ 202.392,00
2019	Sandwich PhD (6 months)	1	R$ 40.478,40
2020	Senior Visiting Professor Abroad (5 months)	3	R$ 171.223,20
2020	Sandwich PhD (6 months)	5	R$ 202.392,00
2020	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58
2021	Junior Visiting Professor Abroad (12 months)	1	R$ 113.716,80

2021	Visiting Professor in Brazil (7 months)	1	R$ 116.110,58
2020	Post-doctorate with experience abroad (12 months)	1	R$ 69.310,58
2020	Visiting Professor in Brazil (2 months)	1	R$ 37.555,29
2021	Post-doctorate with experience abroad (6 months)	3	R$ 107.265,87
2022	Visiting Professor in Brazil (2 months)	1	R$ 37.555,29
2022	Sandwich PhD (6 months)	3	R$ 121.435,20
2019	Young Talent with Experience Abroad (12 months)	1	R$ 116.110,58

WORK MISSIONS NOT RELATED TO THE PROJECT

Year of the work missions	Quantity of work missions per year	Amount of the work missions
2019	1	R$ 25.466,00
2020	1	R$ 25.466,00
2021	1	R$ 25.466,00
2022	1	R$ 25.466,00

SCHOLARSHIPS NOT RELATED TO THE PROJECT

Year of the scholarships	Modality	Quantity	Amount
2022	Training (3 months)	1	R$ 25.466,40
2019	Training (3 months)	2	R$ 50.932,80
2020	Training (3 months)	2	R$ 50.932,80
2021	Training (3 months)	2	R$ 50.932,80

OTHER PROGRAM ACTIONS

Year	Actions	Description	Amount
2021	English language immersion course at partner universities	Faculty and staff participation in English language immersion courses at partner universities, upon having taken the TOEFL test and/or Language without Borders courses at UFSM and demonstrated the required level of sufficiency. This value will cover expenses for two employees per year.	R$ 90.000,00
2020	Organize a multidisciplinary even of research projects involved in the strategic themes	Evaluation of projects involved in strategic themes and discussion among member of the different research groups, from a multidisciplinary and creative perspective, through internal seminars with guest technicians and researchers.	R$ 90.000,00
2019	English language immersion course at partner universities	Faculty and staff participation in English language immersion courses at partner universities, upon having taken the TOEFL test and/or Language without Borders courses at UFSM and demonstrated the required level of sufficiency. This value will cover expenses for two employees per year.	R$ 98.237,00

Year	Actions	Description	Amount
2020	Organize a multidisciplinary even of research projects involved in the strategic themes	Evaluation of projects involved in strategic themes and discussion among member of the different research groups, from a multidisciplinary and creative perspective, through internal seminars with guest technicians and researchers.	R$ 90.000,00
2022	Organize a multidisciplinary even of research projects involved in the strategic themes	Evaluation of projects involved in strategic themes and discussion among member of the different research groups, from a multidisciplinary and creative perspective, through internal seminars with guest technicians and researchers.	R$ 90.000,00

EXPECTED BENEFITS

Amount related to the cooperation project	R$ 33.275.149,96
Amount of work missions not related to the cooperation project	R$ 407.456,00
Amount of scholarships not related to the cooperation project	R$ 713.059,20
Other program actions	R$ 458.237,00
Total Amount of the Project	R$ 34.853.902,16

COUNTERPART

1. Internationalization of the curriculum - Incorporation of international themes in the undergraduate and postgraduate classes.

UFSM has been known for its internationalization efforts since its creation in the 1960's, at which time it maintained a number of activities, mainly with North American and European universities, for the most part in the U.S., Germany and France. Throughout its development, with support from organizations such as FAO and UNESCO, it has benefited from participation of visiting foreign professors who gave classes and carried out research, serving as the basis for the creation of the graduate programs. In 1969, the Osvaldo Aranha Project, financed by the UN, established the foundations of the Rural Sciences Center. During the 1970's, UFSM began to enhance its Inter-American relationships, forming the foundations for programs in the Humanities. These foundations remain and the international agreements have expanded. Today, it is common to have foreigners on campus, as visiting professors, researchers or graduate and undergraduate students. UFSM has set up a fund for internationalization efforts, in line with the Institutional Development Plan (PDI), which establishes internationalization as one of the seven institutional challenges for the next ten years. This fund finances actions that contribute to the improvement of internationalization indicators within teaching, research and extension, especially within the graduate programs. In terms of internationalized teaching, a number of activities are being developed, including interdisciplinary activities and active methodologies for distance interactions, international work mission, internationalization of physical spaces that support research (audiovisual resources, rooms, improved internet networks), curricular and website adaptations. Currently, all the curricular courses have been standardized and translated into English so that they may be made available on the website and for emission of documents by the Department of Academic Control and Registration. In addition, a number of graduate courses offer classes in foreign languages, especially in English.

2. Production of international publicity materials in other languages, including websites of the courses and programs.

One of the goals of SAI is to elaborate translations of the UFSM website into Spanish and English, in addition to publicity material in foreign languages, providing information about courses offered. The

SAI website also has a great deal of useful information for foreign students and faculty. Besides the site, there are a number of materials to publicize UFSM at foreign institutions, including a prospectus, designed to advertise opportunities for exchange programs. The attractive brochure is available in PDF and print formats and includes a bilingual text introducing the university, its background and current context, as well as information about the city and region, and academic information, including all of the university units and their course offerings. There are also a number of institutional videos in both English and Spanish. In 2017, UFSM launched a pilot project to translate the Graduate Program websites to foreign languages, beginning with the Graduate Program in Communication, in English and Spanish, which served as the standard for the other programs. In 2018, the PRPGP released a call for application to receive grants for this purpose, with PRPGP funds. Currently, out of the 29 *stricto senso* programs with master's and PhD courses, 17 have bilingual websites with information at least in English.

3. Training and qualification of staff for institutional internationalization.

UFSM participates in the Languages without Borders Program, which provides free classes to students, faculty and staff, including preparatory classes for the international language proficiency test TOEFL ITP. Besides preparing students for the test, which serves to fulfill language requirements for participation in mobility programs, it also provides needed language skills to communicate with foreign students and faculty arriving at UFSM. In addition, the language laboratories Labeon, LINC and Entrelinguas, at the Department of Modern Foreign Languages, offer extension courses in foreign languages and provide reserved spots for students who receive financial aid.

4. Counterparts offered by foreign partnership institutions, when applicable.

UFSM is a founding partner of the Asociación de Universidades Grupo Montevideu (AUGM), which is a network of public, autonomous universities, with headquarters in Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay. Within the scope of AUGM, there is financing of student and professor mobility activities. This financing comes from the individual universities, as well as from funding agencies, the Organization of Ibero-American States, embassies, UNESCO, among others. UFSM also has specific agreements with the Russian Research and Production Company, which provides funds over R$430,000.00 for temporary operational maintenance of unidirectional measurement of the Glonass Navigating and Positioning System.

5. Other counterparts, when applicable.

The Internationalization Program at UFSM, registered as an institutional project at the Provost Office for Planning and carried out by the PRPGP, allocates R$400,000.00 over a period of four years as UFSM for budgetary expenditures to match expenses covered by the Capes PrInt Project, aiming to stimulate the expansion of international scientific production in all areas of knowledge, increase internationalization indices for graduate programs, create a physical environment that is suitable for the internationalization of graduate teaching and provide greater international visibility to UFSM graduate programs. This funding will go towards achieving goals related to internationalization, in line with the Institutional Development Plan and will be distributed throughout the period to cover expenses related with travel expenses, services to private companies, construction and installation of facilities and permanent equipment. UFSM also has additional support for other internationalization activities, such as support for publication in qualified journals, through the program Pro-publications, which provides support for translation and editing of articles in foreign languages, and Pro-journals, which provides support for UFSM journals. Both of these programs operate using an annual call for application.