



# SEMANA DE LA

# ciencia

4th Edition  
**2017**



Faculty of Exact and Natural Sciences - FACEN National University of Asunción  
Dirección de Relaciones Exteriores y Difusión - FACEN - UNA.  
University Campus - San Lorenzo - Paraguay

Phone/Fax: +595 21 585 600 e-mail: [facen@facen.una.py](mailto:facen@facen.una.py)

## ■ ACKNOWLEDGEMENTS ■

Through its Governing Board, FACEN-UNA thanks all the people who supported this fourth exposition with their presence. We also thank our faculty members, our administrative staff, and our students, who were in charge of organizing and once more proved their excellence and predisposition to show what we have to offer as an academic institution and as service providers. Without all of you, it would not have been possible to succeed at this task.



FACEN – UNA received more than 1,700 secondary education students, several teachers, and university students aside from other people interested in the laws of science and their technological applications. The goal of bringing scientific knowledge closer to the young in an entertaining and educational way was reached. Attendants were also able to know more about the academic programs offered by our Faculty



## EDITORIAL

This year we ended the first semester in the best possible way, with unprecedented success, with more than 2,500 people who visited the different pavilions and stands from the careers offered by this Faculty during the fourth edition of the Science Week, carried out since 2014.

With activities such as this, with excellence as the main goal in all the components and sectors of the Faculty, since 1991 and long before as the Institute for Basic Sciences, this great community which is FACEN-UNA prioritizes multidisciplinary work, training the leaders that our nation needs: competent professionals and young entrepreneurs concerned with the environment, committed to the consolidation of a more equitable, just, and humane society based on scientific knowledge for the development of our country, the region, and the world; while also informing the public about the new inclusive undergraduate and graduate academic programs offered by our Faculty, and encouraging all of us to be better.

The Semana de la Ciencia complements the joint efforts and the exercise of voluntary feedback among all those who make up this institution, whose main interest is to encourage the new generations for the constant training of future researchers in a participatory and playful environment with the Interdisciplinary approach, according to the new times we live..

In turn, we share with the great local public the various activities carried out by our different Departments and the periodical professional work of our certified laboratories that offer services, as well as the research projects currently in progress that our Professors participate in at a local and international level.

Because of this and much more, we have taken up the responsibility of writing this special newsletter with all the information concerning this important activity that benefits our institution, which compels us to continue on the path to excellence and constant feedback, and to face the challenges posed by innovation, development, and research with fortitude and responsibility, in the difficult and colossal task of training the professionals of the future.

I send special congratulations to the faculty members, the administrative staff, and the students of FACEN who made this achievement possible for our institution, since Universities must be generators of the intellectual transformations that the country needs for its development, by training the new industrious and hard-working citizens that will come out of our classrooms

Prof. Lic. Constantino Nicolás Guefos Kapsalis, MAE  
DEAN FACEN-UNA

## ■ Great start for the activities of Science Week 2017 ■

On July 25th of this year began the fourth edition of FACEN's Science Week, whose aim is to awaken interest toward science through constant encouragement for the training of future researchers, "in a participative, interactive, ludic environment with an interdisciplinary focus"; aside from sharing information about the undergraduate and graduate programs offered by our Faculty and the different activities performed by each Department, as well as the research projects in which our students and professors are currently involved, both at the local and international level.

As in previous years, a select cycle of talks and conferences was prepared by students and professors, to tell our visitors about the projects that are being carried out in our institution, and which are the new global tendencies in science and technology.

Throughout the duration of Science Week activities, we had the presence of visitors from foreign countries who got to know a little more about our culture, observe the beauty of our country, and see the San Lorenzo University Campus, a true green lung of the city of San Lorenzo with 30,000 daily visitors.

As always, we highlight the hospitality with which our visitors were received. They received all the necessary support to make their short stay as pleasant as possible.

We believe in the need for this kind of activity to continue year by year as a tradition of our Faculty, for future generations of students committed to human development through knowledge and scientific research in all fields.



## ■ A bit of history: Four years of FACEN's Science Week ■

On July 30th of 2014, FACEN organized its first Science Week with a great number of participants of all sectors of national education; students from schools and other Faculties of the National University of Asunción and other universities attended this event, which counted with stands dedicated to each program offered by our Faculty, as well as with talks, conferences, seminars and debates about science and technology in Paraguay. Like the following editions, the event lasted three days.

In that simple and entertaining inauguration, the Dean of our Faculty talked about our duty to continue on the path toward excellence, and highlighted the good will of the students, academic staff, administrative staff, and authorities who joined efforts to make that first edition of the Science Week a success. Today, in its fourth edition, Science Week has shown the intense voluntary work of its academic staff, students, and administrative staff to organize the scheduled activities in an outstanding way.

In turn, the Dean has mentioned that nowadays the academic staff faces new challenges and it must assume this new role as trainers of future professionals in technological innovation and development by showing the public the advances of science in the best possible way.



1st edition of Science Week - 2014

## ■ Science Week 2017, first day of activities ■

In the afternoon of its first day, Science Week 2017 received visitors interested in participating in the science fair. Over 380 students, both from primary and secondary education, attended the event, and were amazed by the items exposed at the Biology pavilion.

Aside from observing the scientific exposition, our visitors had the opportunity to attend talks and conferences dictated by members of our academic staff, among which we can cite Prof. Zulma Elizabeth Zamudio, who spoke about the potential of GeoGebra as a tool for primary, secondary, and higher education; and its applications in engineering within the scope of interdisciplinary and collaborative work. Prof. Juan Carlos Barreto gave a talk about generalizations of Bernoulli's equation and their potential in the modelation of several physical, biological, and economic phenomena related to blow-up and quenching. On behalf of the Biology Department, Lic. Mónica Benítez gave a detailed report about the genotoxic effects of sediments from the bay of Asunción; while MSc. Néstor Jara and MSc. Anselmo Maciel talked about probability sampling and baselines, statistical tools for the management, monitoring, and assessment of project results. We also had a talk about online learning resources by technicians from the National Council for Science and Technology.



## Opening of Science Week 2017: Artistic groups of FACEN-UNA.

The official opening event for this year's Science Week was done at the Judith Dos Santos Multipurpose Room. On the occasion, FACEN'S drama club, dance club, and polyphonic choir entertained the attendants with several artistic numbers and folk music.

During the event, Gabriel Ojeda and Víctor Sosa Traverzi presented the teaser for their movie "Lopez Hipertextual," a film about Marshal Francisco Solano López—not just as the hero or villain some people think he was but as the human being behind those roles. This is the first movie made by FACEN and by UNA in over 120 years of history.

The National University of Asunción must place itself at the forefront of culture in the country, taking into account the need to promote drama and arts in general as a means for education, artistic enjoyment, and encouragement for thinkers, actors, and playwrights who will contribute to our cultural heritage and elevate our drama artists to the level demanded by current times. FACEN's drama club contributes to the achievement of this goal by participating in the making of this film.

Science Week organizers and FACEN's authorities believe that this first step will be one of many in the eventual achievement of the great goals set for culture in general at UNA. The movie is scheduled to be released in March 2018.



## ■ Second Day of Conferences - Science Week 2017 ■



On the second day of Science Week 2017, FACEN-UNA was the venue for several important conferences, such as “Fuzzy Logic/ Many-valued Logic – For Decision-Making” dictated by Dr. Adriana Santos Caballero, who is currently the beneficiary of a scholarship from the Carlos Antonio Lopez Scholarship Program (BECAL), for the University of Barcelona. Dr. Laura de Cabo shared her knowledge about phytoremediation of heavy metals. Lic. Michelle Campi talked about the Fungi Kingdom and its wonders. MSc. María Gloria Paredes and MSc. Carlos Fernando Sena presented a talk about using InfoStat for the main statistical techniques and about observational design as an alternative to experimentation. Lic. Fernando Ramírez spoke about the evolution of the theories concerning the origin of the universe up to the Big Bang. Lastly, Lic. Gloria Villalba offered an interesting talk about chemistry in the household, and Dr. Julio Benítez gave details about the Scientific Initiation Program currently in place in the Department of Biotechnology.

## ■ CDTA projects and programs, present on Science Week 2017 ■

Without a doubt, one of the stands that have progressed the most throughout the years is the one that belongs to the Center for Technological and Environmental Development (CDTA) from the Services Department, under the direction of Lic. Cedric Masayuki, who explained that on this edition of Science Week many people visited their stand, interested in learning more about the actions toward improving the environment based on the 3R rule.

Attendants learned about water purification and the treatment received by sewage before being released into receiving water bodies. They were also instructed on the Takakura composting method.

Solid organic waste makes up over 50% of solid waste in municipal landfills. This project attempts to make effective use of such residue through composting, offering several benefits such as the reduction of waste in landfills and more beautiful communities



Aside from the aforementioned, CDTA showed the evolution of the various programs and projects it has underway through the Services Department.



The advantage of the Takakura method lies in the fact that it is easy and the compost can be obtained in one or two weeks.

## ■ Science Week 2017, a great success ■

Science Week ended with great success on July 27th. The thirteen undergraduate programs offered by our Faculty, as well as the Services Department, have presented their work for our visitors of various ages and backgrounds.

Around 1,700 people visited the different stands of this science and technology fair on its final day.



On the three days of the Science Week 2017 fair, FACEN received visitors from over 55 educational institutions that sent their students in order to awaken their interest in science. Visitors were able to share educational moments through games offered in the different stands, and they earned rewards if they managed to succeed in the ludic challenges proposed.

## ■ With great turnout, the Science Week Conference Cycle came to an ■ end on its third day

In the late afternoon of July 27th, the three last conferences prepared within the framework of this year's Science Week were carried out. Two of the talks were given at the Judith Dos Santos Multipurpose Room; one of them was "Logistics: a tool for competitiveness for modern organizations", dictated by Prof. Lic. Noelia Páez Von Schmeling. The other talk was "Business innovation", by Ing. Javier Danzinger. The third talk was carried out at the Statistics stand and was given by Dr. Clarisse Díaz Reissner; she presented the talk "Validation of the Paraguayan version of the oral health impact profile (OHIP - 14Py) for adults". Earlier on the same day, MSc. Elena Torres and MSc. Belén Barreto shared their knowledge about the diversity and study of flying mammals of Paraguay; and about the bats from our University Campus, which are being studied within the framework of a research Project funded by the National Council for Science and Technology.

All of this in the last day of the Conference Cycle, without forgetting the important conferences also offered by special guests from the Paraguayan GeoGebra Institute, such as a collection of experiences gained through GeoGebra courses for teachers with the aid of online platforms, and mathematical animations and constructions made with GeoGebra by Prof. Zulma Elizabeth Zamudio. In addition, Ing. Marcos Ernesto Paredes talked about the potential for GeoGebra to be used for resource optimization, problem-solving, and the analysis of modellable circumstances in an agricultural context.

Lastly, we must mention the conference about the strengthening of teaching skills, by Lic. Lucas Martínez from the Department of Teacher Training.





Innovation and research. Technological and scientific applications set a special path for the younger minds that shape the future of our country with their hands