Scientific Initiation with emphasis in mathematics for Young Talents

A door to the scientific and technological careers
Multidisciplinary Organization for support of Teachers and Students

was created in 1989 for a group of young and teachers, passionate for the mathematics.

Nowadays it is an independent entity, non-governmental, nonprofit, that mainly administer wills.
**Mission**

Help students from Paraguay to the higher development in their intellectual capabilities and the application of these skills to the problem solving.

Promote activities of research, culture and education, through programs - specially of national coverage- with emphasis in the area of the sciences and the technologies.

Keep up the opportunities to access to the benefits of our programs for students from disadvantaged social sectors from across the country.

**Vision**

It’s the one of a country with leader young skilled to take decisions based in the logical reasoning, the context analysis and able to consider the variables.
Scientific Careers in Paraguay
Scientific Careers

+ Current Situation

Low mathematical level of the applicants and, as a result, big difficulties to access.

Notable differences of level among students from private schools and public schools which causes social exclusion.

Aggravated economic difficulties for full-time careers.

+ Consequences

Discouragement and self discrimination

Low interest in scientific and technological careers

Deterioration of the scientific and technological careers
## Comparative Charts Numbers CyT 2008

<table>
<thead>
<tr>
<th>University Graduated</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Natural and Exact Sciences</td>
<td>283</td>
</tr>
<tr>
<td>2 Engineering and Technologies</td>
<td>430</td>
</tr>
<tr>
<td>3 Medical Sciences</td>
<td>724</td>
</tr>
<tr>
<td>4 Agricultural Sciences</td>
<td>282</td>
</tr>
<tr>
<td>5 Social Sciences</td>
<td>3,625</td>
</tr>
<tr>
<td>6 Humanities</td>
<td>565</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5,909</td>
</tr>
</tbody>
</table>

**Font:** Statistics of numbers in Science and Technology in Paraguay, year 2008, p.38. www.conacyt.gov.py
## Phases and Activities

<table>
<thead>
<tr>
<th>Phases</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation and Catchment</td>
<td>• National Mathematical Olympiads</td>
</tr>
</tbody>
</table>
| Training and Scientific Initiation for Young Talents | • Summer courses  
|                                              | • Annual course of Mathematics  
|                                              | • Forum to discuss problems in Internet  
|                                              | • Several courses of specialization and the EMALCA  
|                                              | • Scholarships                                   |
| Incentive to excellence                     | • International Olympiads                         |
National Mathematical Olympiads

it infiltrates and reaches immediately to students, and creates networks among teachers and pioneer institutions.

And the students always get motivated!

It helps Paraguayan students:
+ to think,
+ to acquire skills in excellence,
+ to develop their imagination and creativity,
+ to persevere in the effort.

It helps teachers:
+ to develop challenging activities in the classroom throughout the year.
Program’s Objectives

To train elite groups, since early years, in the scientific research and the study of sciences, using mathematics as a tool, taking advantage or its playful character and its permeability and interdisciplinary integration in all the areas of human performance.
Scientific Initiation for Young Talents

ANNUAL COURSE

Contents
+ NUMBER THEORY
+ COMBINATORY
+ GEOMETRY
+ ALGEBRA
+ STRATEGY

SUMMER INTENSIVE COURSES

Some courses
+ Problem Solving Methodology
+ Geometry Constructions
+ Geometry Proof
+ Dirichlet Distribution
+ Logic
+ Problem Solving Workshops
+ Divisibility

LEVELS
+ BEGINNERS
+ UPPER BEGINNERS
+ INTERMEDIATE
+ UPPER INTERMEDIATE 1
+ UPPER INTERMEDIATE 2
+ ADVANCE 1
+ ADVANCE 2
Courses and workshops in Asunción and 5 Scientific Initiation Centers in the countryside (year 2012).

- Summer intensive course in December
  350 students

- Summer intensive course in February
  350 students

- Annual Course of Mathematic for Young Talents. From March to September
  120 students
Scientific Initiation for Young Talents

YEAR 2013

- 13 Centers of Scientific Initiation with Emphasis in Mathematics for Young Talents
- 153 Young Talents
Scientific Initiation for Young Talents

Evolution 2011 to 2013

Scientific Initiation Centers for Young Talents
Annual Course

Centers

<table>
<thead>
<tr>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

Students

<table>
<thead>
<tr>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>83</td>
<td>130</td>
<td>153</td>
</tr>
</tbody>
</table>

Participating students
Annual course

Scientific Initiation Centers for Young Talents
Final Round preparation course

Centers

<table>
<thead>
<tr>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>9</td>
<td>13</td>
</tr>
</tbody>
</table>

Final Round Preparation Centers

<table>
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<th>2011</th>
<th>2012</th>
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<td>13</td>
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</table>
Incentive to excellence

International Olympiads

Cono Sur Mathematical Olympiad
12 Bronze Medals (one in 2013)
19 Honorable Mentions (two in 2013)

Iberoamerican Mathematical Olympiad
3 Silver Medals (one in 2013)
13 Bronze Medals (one in 2013)
15 Honorable Mentions (two in 2013)
2 Puerto Rico Cups, 2006 and 2010
International Olympiads

International Mathematical Olympiad (IMO)
1 Silver Medal
3 Bronze Medals (two in 2013)
11 Honorable Mentions (one in 2013)

Latin American Astronomy and Astronautic Olympiad
5 Silver Medals (one in 2013)
11 Bronze Medals (two in 2013)
7 Honorable Mentions (one in 2013)
Organized by

Board for the Strengthening of Mathematic in Paraguay (FACEN, FIUNA y UMALCA)

Main Goal

Contribute to the development of Mathematic in Latin America by contacting young people with relevant topics of current interest and encouraging to the most outstanding students to continue postgraduate studies.
Oriented to
students of last courses of grade education and starting postgraduate studies

It covers
Courses of two weeks, taught by renown specialists in their areas.
Teachers’ reports about the students and their possibilities for future studies.
<table>
<thead>
<tr>
<th><strong>Institution</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Engineering U.N.A.</td>
<td>Scholarships for the admission course and admission test</td>
</tr>
<tr>
<td>Polytechnic College U.N.A.</td>
<td>Scholarships for the admission course and the admission test</td>
</tr>
<tr>
<td>College of Exact and Natural Sciences U.N.A.</td>
<td>Scholarships for the admission course</td>
</tr>
<tr>
<td>College of Agriculture Sciences U.N.A.</td>
<td>Scholarships for the admission course</td>
</tr>
</tbody>
</table>

**In process**
Scholarships for economic support to cover the costs of transportation and general expenses for students from the countryside and disadvantaged social sectors from the capital and the districts where a Scientific Initiation Center works.
**Program’s Impact**

**On the students**
- Improve their skills to think and reason
- Find a space to develop their skills
- Initiate their scientific training
- Encourage the excellence, the effort and dedication
- An space for socialize, participate and collaborate
- Develop the character training and the frustration handling

**For the country**
- Encourage the development of young with specific skills
- Produce students of top level, ready to participate in university programs of excellence
- Stimulate the work of volunteers
In 2001 we were in the position number 83 among 83 countries (IMO). In 2006 we won the cup to the country that advanced the most in Mathematics. In 2010, we won the Puerto Rico cup again (Iberoamerican Olympiad).
Puerto Rico Cup

In 2006 Paraguay got the Puerto Rico Cup!

It is given to the country with the higher relative advance in the last 3 years.

In 2010 Paraguay won the Puerto Rico Cup again!
SCIENTIFIC INITIATION

Some Former-Olympians... Where in the world are now?

Nilda Chamorro
Civil Engineer by the National University of Asunción (Paraguay) with a minor in Environmental Engineering in Palermo University (Italy).

Carlos Alberto Jara
Civil Engineer by the National University of Asunción (Paraguay), he is currently studying a Master’s degree in sanitary engineering in Polytechnic University in Valencia (Spain).

Diego Segovia
Bachelor in Sociology by the Pontifical Gregorian University in Rome (Italy). He was the former Director of public policies and strategies at the Public TV of Paraguay.

Carlos Sauer
Electronic Engineer by the National University of Asunción (Paraguay) with a master’s degree in Computer Science by the IMPA (Brazil), currently studying a PhD in applied Mathematics at the MIT (Massachusetts, USA) with a scholarship MIT – Fulbright – Itaipú.
SCIENTIFIC INITIATION

Some Former-Olympians... Where in the world are now?

**Joel Prieto**
Electronic Engineer by the Catholic University of Asunción (Paraguay) with a master’s degree in engines from Sevilla University (Spain). He is currently studying a PhD in engines in Sevilla University (Spain).

**Guillermo Cabral**
Economist by the National University of Asunción (Paraguay), Master in Economy by Tocuato di Tella University (Buenos Aires, Argentina).

**Carlos Jara de Marco**
Economist by the Catholic University of Asunción (Paraguay), Master in International Political Economy and Development by Fordham University (USA).

**Mattias Hiebert**
Food Processing student at University of British Columbia (Canada)
SCIENTIFIC INITIATION

Some Ex-Olympians... ¿Where in the world are now?

**Andrés Codas**
Automation and Control Engineer and M.Sc. in Optimization applied to the oil industry in the Federal University of Santa Catarina. He is currently a researcher at the Norwegian University of Science and Technology (Norway).

**Maurizio Caló**
Master in Computer Science and Applied Mathematics student at Stanford University, California (USA) with a Stanford scholarship

**Michael Chan**
Aeronautical Engineering student at the University of Cordoba (Argentina)

**Ezequiel Gamarra**
Electromechanical Engineering student at the University of La Plata (Argentina)
SCIENTIFIC INITIATION

Some Ex-Olympians... Where in the world are now?

Mauricio Maluff
Physics and Mathematics student at Northwestern University, Illinois (USA)

Ariel Schvartzman
Computer Science student at the MIT (USA), with a scholarship of MIT

Marcos Martínez Sugastti
Mathematics and Economy student at Columbia University, New York (USA), with a scholarship of his University

Enrique Díaz
Engineering student at Cornell University, New York (USA) with scholarship of Cornell University

Edgar Elizeche
Mathematics student at the University of New Delhi (India) with a scholarship of his University
¡Thanks!

Stay in touch....

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+59521 605154