

Job Market

Bilateral Training Opportunities in the United States and Portugal

Three new collaborative programs between U.S. and Portuguese universities offer master's- and Ph.D.-level training opportunities in engineering, computer science, mathematics, and related areas (see box below). Initiated and sponsored by the Portuguese national government, the programs connect departments at the **Massachusetts Institute of Technology** (MIT) in Cambridge, Massachusetts, **Carnegie Mellon University** (CMU) in Pittsburgh, Pennsylvania, and the **University of Texas, Austin** (UT Austin), with several universities in Portugal. The participants we spoke to from Portugal, the United States, and Armenia say the programs offer them the opportunity to pursue rich scientific and technical challenges, experience living and working in different cultures, and gain new skills that promise to keep their careers moving forward.

MIT-Portugal masters' program: João Ricardo Gonçalves

A career in engineering has always appealed to João Ricardo Gonçalves, who says he savors the opportunity such a career offers "to deal ~~directly with clients, technology, and~~ industry." A development engineer in a plastics company, Gonçalves enrolled in the MIT-Portugal master's program as a way to gain skills he expects to help him in his current job.

Gonçalves studied polymer engineering at the **University of Minho** in his native Portugal in a course that combined chemistry, his favorite science subject, with professional preparation for work in the plastics industry, which has a strong tradition in Portugal. After he graduated in 2005, Gonçalves interned at **OGMA**, a company in

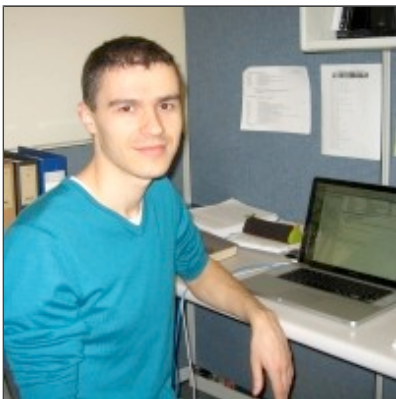
The UT Austin-Portugal Ph.D. program "gives me opportunities [to] not only improve my mathematics but also work in both universities with great mathematicians." -- Rafayel Teymurazyan.

Portugal's aeronautics industry, then worked for 5 months as a product developer in the **Innovation in Polymer Engineering Center** at the University of Minho. In 2006, Gonçalves took his current job as a development engineer at **Celopls**, a Portuguese company based in Barcelos that specializes in plastic components for the automotive industry.

While keeping his job at Celoplás, Gonçalves enrolled in the **engineering design and advanced manufacturing** program in September 2007. The course is based at the University of Minho, where Gonçalves spends 2 weeks studying for every month he spends working at Celoplás; the program's flexibility allows him to balance his studies with his ongoing job. The master's program offers training in product development, business management, and technical skills. For his master's project, Gonçalves plans to focus on methods to design and produce capsules for radio-frequency identification tags--high-tech substitutes for bar codes--and study their market potential.

Gonçalves joined the MIT-Portugal master's program because it allows him to take a new, "multidisciplinary approach to complex engineering problems," he says. Taught by both Portuguese professors and visiting MIT scholars, the courses cover subjects such as "innovation management or product development," which, he says, "will be a real benefit for my career."

CMU-Portugal Ph.D. program: Rodrigo Belo



Courtesy, Rodrigo Belo

Rodrigo Belo

A resident and native of Portugal, Rodrigo Belo decided to apply for a Ph.D. under the CMU-Portugal **technological change and entrepreneurship** program for the opportunity it offered to "divid[e] my time between Portugal and the U.S. and the possibility of working with scientists on both sides of the Atlantic," he says. Now in the 2nd year of his Ph.D., the professional software engineer sees new career opportunities opening ahead of him.

Before joining the program, Belo earned an undergraduate degree in computer science and engineering at Lisbon's **Higher Technical Institute**, followed by a master's degree in engineering policy and

management at the same institution. He then worked as a software engineer for **SISCOG**, a Portuguese company based in Lisbon that addresses complex railway-scheduling problems.

Students in the 4-year CMU-Portugal program spend the 1st year in coursework at a Portuguese university and their 2nd year at CMU. At the end of their 2nd year, students are expected to pass qualifying examinations and to have a research paper on its way to publication. The last 2 years are dedicated to dissertation work, with a supervisor in the United States and another in Portugal. Students are required to spend time in both countries.

Now in his 2nd year, Belo is interested in studying whether bitcaps, downloading limits imposed by Internet service providers, influence business models and consumer behavior. He isn't sure yet how he will put his new qualification to use, but "the idea of an academic career is becoming more attractive," he says.

CMU-Portugal Ph.D. program: Rebecca Mayer

U.S. economist Rebecca Mayer applied for admittance into the CMU-Portugal **technology, innovation and policy program** "because of its interdisciplinary approach to science, economics, and policy," she says. Also important were the opportunity for exposure to a foreign culture and the intellectual vitality of the Pittsburgh campus. "CMU offers a vibrant academic community and intellectual environment that I do not want to miss out on," Mayer says.

Mayer studied near-Eastern languages and civilizations at Yale University, then earned a master's degree in economics from Tufts University in Medford, Massachusetts, in 1999. Later, she became interested in telecommunications when her language skills earned her a job researching Middle Eastern telecom markets. For the past 10 years, Mayer has worked on case studies in rural telecommunications for the International Telecommunication Union and on information and communication technology infrastructure investment forecasts for the World Bank. "I am basically an economist with a hankering for using appropriate technology to promote economic development," Mayer says.

Like Belo, Mayer will divide her time between Lisbon and Pittsburgh. Her time in Portugal is a big advantage for her international career aspirations because many developing countries follow European telecommunication standards. "Relocating to Lisbon was very easy," she says. "I can't even begin to pronounce Portuguese words properly, but fortunately, many people speak English and are friendly and helpful."

For her dissertation, Mayer expects to focus on "the impact of spatial population distribution, infrastructure networks, and terrain on the business models for different types of wireless communications technologies in Africa." She plans to resume her career in the telecommunications sector after she finishes her Ph.D.

UT Austin-Portugal Ph.D. program: Rafayel Teymurazyan



Courtesy, Rafayel Teymurazyan

Rafayel Teymurazyan

Rafayel Teymurazyan obtained a master's degree in mathematics from Armenia's **Yerevan State University** in 2006. After working as a teacher in the university's faculty of mathematics, Teymurazyan entered the 4-year UT Austin–Portugal **doctoral program in mathematics**. The program, he says, allows him to "not only improve my mathematics but also work in both universities with great mathematicians." Still in the 1st year of his Ph.D., Teymurazyan is taking courses at the **University of Lisbon** that he and his tutor selected to suit his specific interests. In September, Teymurazyan will relocate to Austin for a year for the second part of his classroom work. After that, he will split his time between the two countries as he pursues his research during the last 2 years of the program.

For his dissertation, Teymurazyan plans to study free-boundary problems. "I

am positive that this Ph.D. is a perfect chance to deepen my knowledge in mathematics in more effective ways and become a competent mathematician. This is my goal now," he says.

U.S.-Portugal Training Programs

All coursework for these joint U.S.-Portugal training programs is conducted in English. International applications are welcome. Some scholarships are available.

1. **MIT-Portugal**

Key areas: Engineering and bioengineering systems, engineering design and advanced manufacturing, sustainable energy systems, transportation systems.

Education offered: Ph.D.s, master's degrees, and short courses.

Ongoing opportunities: Ph.D. **applications** will close on 28 February 2009.

Altogether, 99 students from 16 countries were accepted for the 2008–09 academic year.

2. **CMU-Portugal**

Key areas: Information processing and networking; critical infrastructures and risk assessment; technology, innovation, and policy; and applied mathematics.

Education offered: Ph.D.s, master's degrees.

Opportunities currently ongoing in several **programs**.

3. **UT Austin-Portugal**

Key areas: Digital media, advanced computing, mathematics.

Education offered: Ph.D., master's degrees.

Next opportunities: Summer 2009.

15 students every year for all programs.

Photos, top to bottom: João Ricardo Gonçalves/Celoplás. Courtesy, Rodrigo Belo. Courtesy, Rafayel Teymurazyan

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