Universidad Panamericana School Projects

The students of the School of Engineering at UP have strong possibilities to participate in both national and international contests that will test the knowledge acquired in the classroom and in the laboratories.

To complement these efforts on behalf of the projects, the engineering faculty has agreements with different schools around the world such as MIT. Speaking of which, MIT and UP signed a collaborative agreement for internships last year so that our and their students and teachers can profit from our exchange programmes.

As an example of these activities is the following:

**MIT AND UP RESEARCH IN INTELLIGENT ROBOTIC LIMB**

In June 2018, one of the most important factors to trigger research has been the collaboration between educational institutions. In this sense, the Universidad Panamericana together with the Massachusetts Institute of Technology (MIT) has developed active links that allow student mobility. Such as Noel Esparza Durán’s case, MIT visitor, who is doing a research stay in the school of Engineering, tutored by the research professor Hiram Ponce, from June 18 to August 17.

Noel Esparza’s main objective is to develop and manufacture a prototype of an intelligent robotic limb which is able to learn by itself, to reconfigure and stay in balance. Among the activities that the MIT student will be doing at our university are: 3D simulation of a robotic leg, manufacture, implementation control and learning systems, as well as a series of experiments that seek to prove the efficiency of the model.

This prototype is part of the research conducted by Ph.D. Hiram Ponce who is working on the design and development of robotic systems inspired by movement of animals. With this visit, we hope to obtain a functional prototype of the robotic limb, compare the behaviour of this limb with respect to simulations that already exist, and study new ways of designing control and learning systems.
THE MISSION BEGINS! STUDENTS GO TO MIT TO DEVELOP MICROSATELITES

Students from the Universidad Panamericana will begin the mission of creating and developing microsatellites, in collaboration with Massachusetts Institute of Technology (MIT), as part of the collaboration agreement signed by both institutions.

A group of 25 students (10 students from Campus Mexico and 15 from Campus Aguascalientes) will be in MIT's Aerospace department to begin the mission of planning and designing the above-mentioned devices.

The microsatellites are launched in low orbits around 600 kilometres of altitude as a part of larger space missions that seek to offer services in different areas.

The companies that finance these projects are usually telecommunications, technology or space agencies. In this occasion, the UP will be assisted by the Mexican Space Agency (AEM).

The mission is planned to advance in technological and scientific knowledge in the field of space and communications, and in concepts such as navigation, propulsion, solar energy and space structures will be implemented.
The design, construction, launching and operation of the mission will last two years.

On behalf of Campus Mexico, the students participate in this project are:

David Poza, 8th term, Mechatronics
Elizabeth Morales, 8th term, Mechatronics
Guillermo Mora, Master’s in Engineering
Orlando Scott, 6th term, Information Technologies Engineering
Angel Mario Zárate, 2th term, Mechanics
Samir Ruiz, 4th term, Mechatronics
Ricardo Zamora, 8th term, Mechanics
Emiliano Hernández, 6th term, Mechanics
Toribio Malvaez, 4th term, Mechatronics
Guillermo Campos – Post Degree

Representing Campus Aguascalientes are:

Ana Fernanda Navarro, 6th term, Pedagogy
Juan Bernardo Calabrese, 8th term, Mechatronics
Bernardo Muñoz, 8th term, Electronics and Digital Systems
Damián Gabino Rascón, Post degree in Robotics
Eduardo León Muñoz, 8th term, International Business
Emiliano Valdepeña, Post degree in Robotics
Fernando Dávalos, Master’s in Science
Jerónimo Álvarez, 8th term, Energy Technologies
José Manuel Macías, 8th term, Mechatronics
Luis Enrique Correa, 6th semester, Artificial Intelligence
Manuel Enrique Romero, 8th term, Electronics and Digital Systems
Marco Antonio Murillo, 8th term, Mechatronics
Santiago Sánchez, 8th term, Law
Sebastián Franco, 6th term, Artificial Intelligence
Mariana De la Vega, 2nd term, Artificial Intelligence
On April 15 and 16, students of the international logistics degree, participated in a congress at MIT. The main object of the congress was to help companies, government and organizations to compete in a growing and complex business environment as well as to motivate students and teachers to collaborate in projects that have a big economic, social and environmental impact.

The students who represented UP Campus Mexico were Marcela Fernández, Scarlett Hartmanny and Paulina Leal.

Their project was a mathematical model for the design of a supply chain, based on Manzini and Bindi contributions in 2009, thinking of an auto parts company that intends to start distributing in Latin America, having Mexico as a distribution centre.

Over the experience of participating at this congress, the students agreed that “It was very pleasant and with so much knowledge. We learned from all the projects involved in the congress and the lessons we attended. We would like them to promote more these opportunities”
MIT STUDENTS VISITS UP

In January 2018, 4 students from the Massachusetts Institute of Technology (MIT) taught maths and physics to UP high school students. This was possible thanks to the agreement celebrated in 2017 between UP and MIT.

Max Raven and Sandra Walter studied Mechanical Engineering, Andrea Garmilla studied Biotechnology and Raymundo Rodríguez studied Mathematics.

This session allowed high school students to realise their knowledge level and led them to trust in themselves.

In one of the testimonies that Max Raven gave, he said that he applied MIT together with one of his best friends. He was a student with several extracurricular activities and his friend was a student of excellence throughout his life. Max achieved to enter MIT and said that the key was to find a balance in all his activities, taking school as a priority, without neglecting his hobbies, friends and others.

MIT TEACHER MAKES MOBILITY RESEARCH AT UP

In August 2018, Professor Ron Martin, MIT Media Lab specialist from the school of architecture and planning laboratories made a summer stay at Universidad Panamericana in which he developed a mobility and sustainable study.

This work derived from the recent partnership between MIT and UP and enriched the effort made by both UP and the Secretary of Mobility to impulse a regional plan that improved the mobility conditions at Insurgentes Mixcoac and its surroundings.

This is truly relevant since UP is the first institution of higher education to sign an agreement with the Secretary of Mobility. This agreement will be reinforced with the experience and prestige of MIT specialist turning into a model for the whole city.
Ron Martin explained that the achievement of his stay at UP had been to "Begin to conceptualise a holistic urban design project to improve the roads in the area, starting with the UP community, through actions that favour pedestrians such as encouraging the use of bicycles and car sharing." He also mentioned that “…mobility is a complex concept. We have to create a cultural concept and I think that all the education institutions are a very strong field to improve this aspect.”

ENGINEERING TEACHER WON THE GOOGLE AWARD TO RESEARCH

PH.D. Hiram Ponce Espionosa, researcher and professor of the School of Engineering at UP, received the Google Latin American Research Award (LARA) 2017 which promotes research in computer science fields.

His project Learning Transfers Through Artificial Hydrocarbon Networks: A Robotic Study Case was one of the 27 selected proposals from more than 280 subjects from Latin American countries.

With this initiative, Google made us know a new generation of 27 researchers in computer science, which, undoubtedly, represents a great impulse for Latin American researchers.

PH.D. Hiram Ponce Espionosa explained that his proposal deals with the learning transfer, meaning that all device with artificial intelligent is capable to transfer knowledge to similar machines. He attested that:

The intention is that one device learns and then, that knowledge can be transferred to another device. Currently, this is one of the main topics in artificial intelligence, because it brings many advantages to learning improvement, data understanding, and how this data could improve the user experience.
He also affirmed that.

It is regional acknowledged that on research matters, we are still a little behind. As a researcher it’s an honour to receive an award of this level and it’s a responsibility that encourages me to support more students, promote knowledge to these generations and contribute to build a better country.

AIMÉE GÓMEZ IS DOING A RESEARCH INTERSHIP AT CALTECH

Our student Aimée Gómez is doing a research internship at Caltech, one of the main institutions dedicated to science and engineering. She is a student of Mechatronics Engineering and she won the SURF award (Summer Undergraduate Research Fellowship) at Caltech.

The SURF programme invites university students to apply for summer research stays, in which Aimée participated by creating a corporal body that measures temperature through an app. She comments that: “it’s so interesting to work on a research project with students who have the same learning.”
As part of the School of Engineering projects, we have 4 featured competitions which are the following:

**SAE Aero Design.**

The Society of Automotive Engineers (SAE) is the global leader in technical learning for the mobility industry.

This project’s objective is to build an aircraft that is able to lift certain loads and drop them in a specific target.

SAE Aero Design has been intended to provide exposure to the kinds of situations that engineers face in their real-life work environment and it has three classes of competitions in which our students participate in the most difficult class named Advanced.

Advanced Class requires teams to have a systems approach to design while integrating several engineering disciplines: aeronautical, mechanical, electrical, and computer engineering.

For the past 4 years, our students have been participating with great results reaching the top 10 international universities rate by SAE.
BAJA SAE

Is a project conceived and developed by our freshmen and our seniors students. It is one of the oldest projects in which our students have been participating since 1990. Students are asked to design and build an off-road vehicle that will survive the severe punishment of rough terrain. Each team's goal is to design and build a single-seat, all-terrain, sporting vehicle whose structure contains the driver. The vehicle is to be a prototype for a reliable, maintainable, ergonomic, and economic production vehicle which serves a recreational user market.

Hitherto, our students have been participating in both national and international contests. Instances of such are Toluca, winning the 19th place out of 30 competitors; Washington in 2015 reaching the 27th place out of 120 competitors, and Tennessee in 2016 obtaining the 50th place out of 120 competitors, among others.

Electratron

In the domain of energy efficiency, this project’s main objective is to build a small monoplaz that can cover as many laps as possible in 1 hour with electrical batteries. Although Electratron is a national contest, in mid-term, we are planning to participate in international competitions that are directly related to energy efficiency such as Eco-Marathon by Shell.

During the current year, our students have partaken in two contests in which they have obtained the 7th and 2nd places respectively. Thanks to their participation, they have also gained experience and a great deal of improvement in a short period.

It should be noted that a large part of the economic support for all these projects comes from our students and sponsors that the students can obtain.
Sumo Robots

is our new born project which is part of the robotic developing programme. Its main objective is to build a small moving robot whose main duty is to take out another small robot from an area named “dojo”.

Following the same pattern of our previous projects, our students have to go from scratch, designing and constructing the robot model until they reach the point in which the program makes the robot perform the desired tasks.

Like Electraton, this project belongs to the national category, with the midterm intentions to participate in an international contest in Japan.

To build this kind of projects, we have Faculty advisors who help the students to manage and reach the project's objective. All these Faculty Advisors are full-time teachers from the School of Engineering.