Tec’s Sonora Norte campus develops project with Algerian university

Mechatronics engineering students from the **Tec’s Sonora Norte campus** have participated in an **international project** with the **Ferhat Abbas** **University in Setif, Algeria.**

The **aim of this joint project** was to identify an electronic system, as well as **design and implement** an **automated control system**, which was carried out via **simulation**.

Professor **Luis Carlos Félix,** who teaches the “**Control System Design**” subject at **Tec,** said that the importance of this project lies in **preparing students for a world with global challenges.**

*“It’s valuable for our students to have **academic experiences with other cultures** so that they develop a **global vision** and become empathetic and tolerant people,”* added Félix.


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Control system design and implementation

The exercise consisted of forming **teams** of **Mexican and Algerian** students to solve a practical **electronics** problem together.

“Working with our Algerian classmates, we could provide a solution based on the knowledge we already had,” explained **Ena Azcona***,* a mechatronics engineering student at Tec.

Student **Pedro González** described the practical problem they worked on: *“The project dealt with the **simulation of a low-pass filter with a control system.** First, we modeled the filter’s operation on its own and then we designed an automatic controller.”*

Low-pass filters block high-frequency signals, i.e., those that oscillate very quickly between a minimum and maximum value.

*“These filters are used to **reduce ‘noise’ in electrical sensors**, which causes small high-frequency disturbances in the real value of a sensor’s voltage,”* added Pedro.

“It’s valuable for them to have academic experiences with other cultures so that they develop a global vision.” - Luis Carlos Félix.

Developing a global vision

Ena Azcona highlighted that prior to concentrating on the practical problem, the team took a moment to get to know each other and discuss their cultures, which helped them work together.

She added that observing **different customs and teaching approaches in other countries** was a way of **broadening her outlook** and made her want to learn more about her chosen career.

Paolo Jiménez said that his **favorite part** when taking part in this project was realizing that:

“Even though our countries are very different, ***we could still connect the learning and knowledge acquired,*** *with engineering as the link between these two cultures.”*

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Paolo points out that **respect played an important role** in teamwork, since it involved **challenges such as the language** and **different time zones** for video calls.

“We had to be ***willing and patient*** *in order to* ***overcome these barriers****, using* ***everything at our disposal****, be it simplifying terms, translations into other languages, and even gestures.”*

*"**We could connect the learning and knowledge acquired**, with engineering as the link between these two cultures." - Paolo Jiménez.*

Testimonials from Ferhat Abbas teachers and students

Professor **Seif E. Chouaba** from Ferhat Abbas listed **the benefits of collaboration** between his university and Tec de Monterrey's Sonora Norte campus:

- *Firstly, it was a fruitful, enriching, and unique experience;*
- *Secondly, cultural exchanges for all students are far from trivial;*
- *This collaboration has also allowed us to further strengthen the link between our two institutions;*
- *Finally, working with international colleagues brings **new perspectives and provides a constructive exchange of knowledge.***

Khalil Ouassim, a student from the Algerian university, says it was interesting to learn about the different ways they approach problem solving and **understand their perspectives** on engineering and electronics.

In his opinion, the teams had **great discussions and brainstorming sessions**, and he learned how people from different backgrounds can work together effectively.

*"I also learned more about low-pass filters, as the students had **different ideas and approaches to design that I hadn't considered before**,"* said Khalil Ouassim.

Cherifi Aya, a student participating in the project, added that for her, the experience of **working with students from another country for the first time was wonderful**.

*"I saw their **optimism, culture, traditions, and way of life**, as well as the difference in language and **teaching methods in Mexico** in terms of automation, electronics, and other things,"* concluded Cherifi Aya.

International project details

In this project, students from the **Ferhat Abbas University in Algeria and Tec de Monterrey's Norte Norte Campus** worked together on an activity based on simulation.

Students collaborated to **identify an electronic system,** then **designed a controller and implemented it in software** that emulated a real plant.

Participation in the project was voluntary, since sessions were held outside regular class hours in order to interact in real time with students from Algeria, whose **time zone is 8 hours ahead of Sonora.**

*"We're living in a global world, with **common global challenges** that **require collaboration** between different organizations, regions, and cultures to **achieve common goals**,"* concluded Luis Carlos Félix.

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