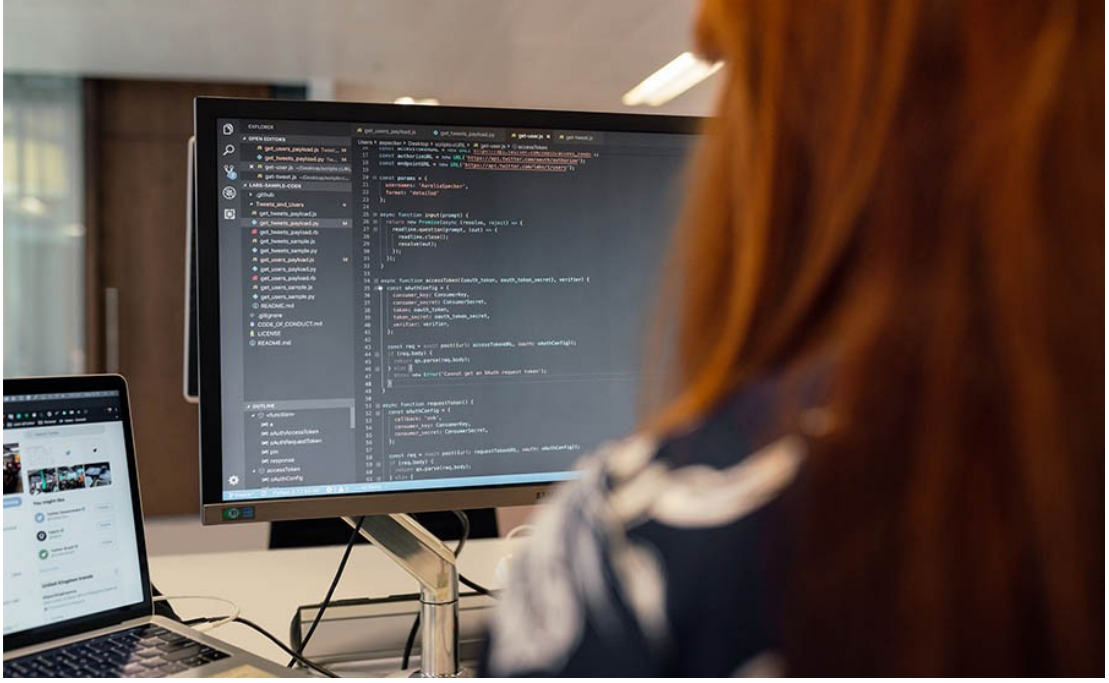
Controlling a laboratory from home? The Tec professor making it happen

*“As teachers, we’ve become aware of the **technological resources** at our disposal and we’ve **transformed them into improvement opportunities for teaching**, practice, and theory, from home*.”

That’s how **Dr. Rosalino Rodríguez**, a **School of Engineering and Sciences** professor at the **Tec’s Morelia campus**, spoke about the challenges teachers have faced when looking for **new ways to share their knowledge** with students remotely, as a result of the **COVID-19** pandemic.

As part of the **5th IEEE World Conference on Engineering Education (EDUNINE 2021)**, **Professor Rosalino** revealed his educational innovation project to the world, entitled **‘Home laboratory for free automation learning,’** via an online talk.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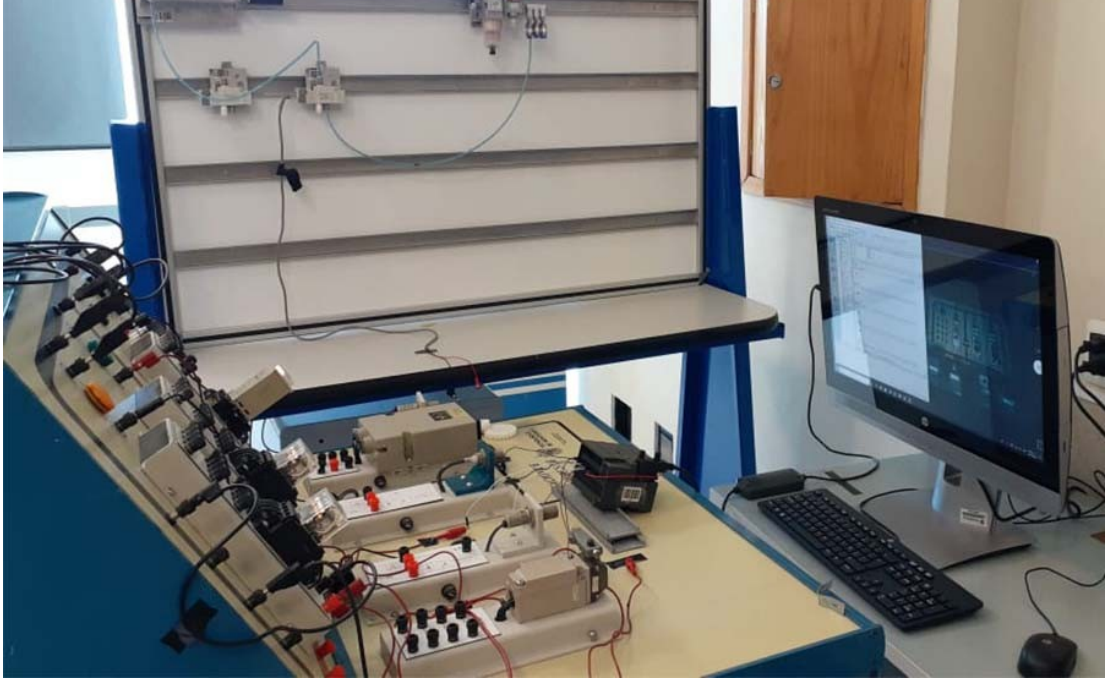
The project developed by the **Morelia campus professor** consists of creating **remote laboratories** that don’t require any additional investment by the educational institutions where they’re implemented or highly specialized personnel to **run them properly**.

*“To run them properly, **specialized remote laboratories** generally need an internet connection, a website server, a database, a web camera, and other physical components, as well as expert personnel in **various fields**, which results in an investment of **over 10,000 dollars**. This is somewhat costly in the short term, **which is how much time the pandemic gave us**,”* said **Dr. Rosalino**.

So, the **laboratories** proposed by **Professor Rosalino** allow engineering students to practice with the **equipment they would normally use on campus**, via a secure connection through **VPN**, **TeamViewer**, or **Anydesk**, enabling students to **interact in real time** with laboratory equipment.

So, the **architecture of the laboratory** proposed by the **Morelia campus professor** consists of an internet connection, a computer with a camera, physical components, and a **point-to-point connection** with the user’s computer system.

*“The **main motivation** for developing this project was to give engineering students the opportunity to **do their laboratory practice** while still at home and avoid affecting their classroom learning. I needed to find a **quick, effective, and accessible** solution to this problem,”* said **Professor Rosalino**.

 width="900"

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Since beginning virtual classes due to the **COVID-19** pandemic in March 2020, **Dr. Rosalino** has been able to apply this **educational innovation** in three different courses: Logical Automation, Industrial Networks, and Control.

*“These subjects have a **practical purpose**. They’re essential to learning things you’ll be faced with once you finish your degree. Being able to **operate laboratory machines from home** without the need for very powerful computer equipment, allows us **to learn more than with simulation**,”* concluded **Eduardo Gómez,** a **Mechatronic Engineering student** at the **Tec’s Morelia campus**.

Dr. Rosalino had the chance to present his **educational innovation** project to other professors, doctors, and students of **engineering** from different parts of the world, such as **Spain**, **Peru**, **Argentina**, and **Guatemala**.

The **5th IEEE World Conference on Engineering Education (EDUNINE 2021)**, organized by the **Institute of Electrical and Electronic Engineers (IEEE)**, was held in a hybrid format (online and in-person) in **Guatemala City** from March 14 to 17 2021.

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