



A strategic alliance between Intel and the Pontificia Universidad Javeriana in Bogotá Colombia created an advanced set of IoT courses that draw from a unified vision:

- **Interdisciplinary**, drawing students from the broadest possible range of IT fields.
- **Flexible**, to support varying levels of technical skill, learning styles, and speeds.
- **Adaptive**, engaging students in a range of design projects, class exercises, and lab work.



Intel® Software Academic Program

Pontificia Universidad Javeriana, Colombia

Expanding IT Training to Enable the Internet of Things

As part of their efforts to make their workforces more competitive in technology-related fields, national governments often sponsor programs to help foster innovation. As one example, the Administrative Department of Science, Technology, and Innovation and the Ministry of Information and Communication Technologies in Colombia recently issued a challenge to academia to strengthen national competitiveness in IT.

In response, the Pontificia Universidad Javeriana in Bogotá joined in a strategic alliance with Intel to advance the state of knowledge in Colombia about the Internet of Things (IoT). Michael A. Smith PhD, director of the Intel® Software Academic Program for IoT, worked with Diego Méndez, an assistant professor of electronics engineering at the university, and Antonio F. Mondragón Torres, an Intel research scientist, to create an advanced IoT program consisting of four classes.

The courses target students who already hold degrees in IT-related fields and who have programming knowledge in modern languages such as C, Java*, or Python*.



IoT Lecture by Michael A. Smith, PhD

- **Course 1: Principles for the Internet of Things** introduces IoT concepts, including the use of sensors, microcontrollers, and the Intel® Galileo board.
- **Course 2: Embedded Systems for the Internet of Things** covers concepts of embedded and real-time computing, with a focus on taking advantage of the features of the Intel® Quark system on chip (SoC).
- **Course 3: Networking for the Internet of Things** teaches networking concepts for IoT, including wireless sensor networks and IoT network protocols, as well as the use of Wind River Intelligent Device Platform XT with IoT gateways.
- **Course 4: Sensors for the Internet of Things** explains potential usages associated with various IoT sensors, focusing particularly on bio-inspired sensors for health and fitness applications, as well as machine vision for security usages.



The Intel® Galileo project board provides students at Colombia's Pontificia Universidad Javeriana with a powerful, flexible basis for innovation on the Internet of Things.

These courses combine the use of application design projects, class exercises, and technical labs to foster a high degree of expertise, preparing students for professional work in this emerging field. After completing all four courses, students can become certified and apply for reimbursement of 80 percent of their costs.

Collaboration between Academia and Industry

Alliances such as the one created between the Intel Software Academic Program and Pontificia Universidad Javeriana demonstrate the value of collaborative approaches to innovation. Intel contributes resources that include hardware, software, and support, while the university drives value from those resources to foster skills in students.

The abilities that students develop from participating in the program of courses benefit them personally in their careers, while collectively advancing the state of competitiveness in Colombian industry as a whole. This approach is proving immensely successful in academic programs all over the world.



Galileo lab instruction for Principles of IoT

Tools to Power Innovation

The foundation of the IoT training program is the collection of solution ingredients provided by Intel to the university.

- **Intel Galileo project boards** are purpose-built for IoT, supporting the full range of usages from exploration and learning to rapid prototyping of solutions that can be developed further as commercial products.
- **The Grove Starter Kit Plus** is a collection of sensors, controls, cables, and other solution components that provide the basis for building a massive range of IoT projects on top of the Galileo boards.
- **Development tools and support** broaden the range of possibilities for participants in the program, with elements such as an integrated development environment (IDE), full programming documentation, and Arduino* expertise.



The Grove Starter Kit Plus

Conclusion

At Colombia's Pontificia Universidad Javeriana, the program of IoT coursework created through an alliance with Intel is advancing the country's ability to compete effectively in the global technology field. In the years to come, students who have completed these courses can be expected to play a powerful role in an increasingly connected world.

Learn more and join at <https://software.intel.com/academic>

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