Technical Institute Students Gain Competitive Skills by Creating Working Digitization Prototypes

Program Description

During the past 45 years, the INTECAP organization has grown to train more than 355,000 Guatemalans a year in different skills and occupations. Their 27 training centers and 6 offices provide business services throughout the country across socioeconomic backgrounds. INTECAP is also part of Guatemala's Ministry of Labor and the International Labor Organization's Inter-American Centre for Knowledge Development in Vocational Training (ILO/Cinterfor).

The INTECAP ICT Training Center provides Information Technology career and short courses. The curriculum and instructor training for the ICT Training Center is provided under the guidance of the INTECAP central organization. It is a growing program, with 8 new academies added throughout the country in 2017!

To ensure that its computing programs are "fit-for-purpose" and meet the demands of industry, INTECAP incorporates Cisco Networking Academy courses. The curriculum includes Cisco's IT Essentials, CCENT, CCNA R&S and CCNP. In 2018, INTECAP is implementing the first IoT career based on the Cisco IoT Fundamentals curriculum.

In 2016, INTECAP was awarded the Advancing Employability Academy Excellence Award by the Cisco Networking Academy.

Networking Academy Engagement

Cisco is a strategically in many areas of training and has been a thought leader for several years at different conferences where industry trends are exposed. Therefore, INTECAP adopted the Cisco program to empower students with technical and soft skills to improve their job placement possibilities.

INTECAP is interested in teaching IoT to extend their curriculum beyond traditional IT programs into other technical domains, such as careers in web design, databases, applications and mobile development, networking, and 3D animation. They now offer short courses for the development of functional prototypes that can be sold or patented. The objective is to improve the students' productivity and competitiveness in these career pathways by introducing the ways IoT impacts each domain.

New Student Pathway Development

In addition to the above IoT program integrations, INTECAP initiated the IoT career pathway on January 29, 2018. According to the admissions process, students should pass psychometric and mathematical tests. The students in

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IoT Fundamentals Best Practice

SUMMARY

Target Audience: Ages range from 16 to adults, in a variety of vocations.

Job Families: IoT Development Technician, Network Administrator, Network and Telecommunications Infrastructure Technician, many software-based careers (see article)

Institution: INTECAP, Technical Institute of Training and Productivity; NetAcad ITC and ASC

Location: Guatemala City, Guatemala

Program:
-New IoT Developer Technician;
-IoT courses for students of web design, database, application & mobile development, networking, etc.

Program Completion:
1-year Technical Degree or 7-month certificate

NetAcad Courses taught:
IT Essentials, CCNA R&S, CCNP, All 3 IoT Fundamentals courses

Impact:
Over 400 students will learn about IoT in the context of traditional IT, networking, robotics, data science, engineering, and general education programs
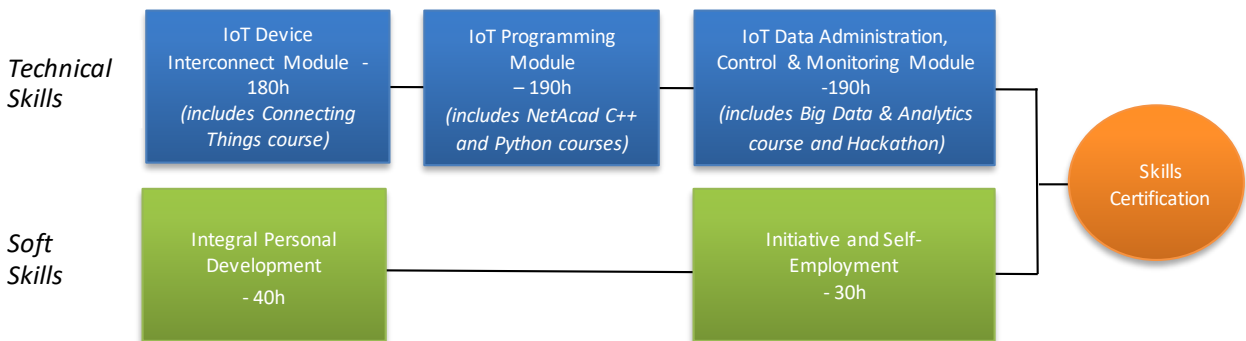
Quote:
"Today there is no high performance without the support of applied sciences and technology".

- Lic. Gerardo Aguirre, President of the Guatemalan Olympic Committee (Institution for which INTECAP organized a Hackathon)

this program take three IoT courses to gain technical competencies and two soft competencies that carry a total of 630 instructional hours over a period of 7 months, as shown below. In addition to the IoT Fundamentals curriculum Cisco Networking Academy provides on its platform, INTECAP developed in-house technical and project management modules for this curriculum. As a result, students create the prototypes for new ideas in Connecting Things, Big Data & Analytics, and Hackathon, but also practice providing maintenance on existing IoT devices such as security cameras, biometric controls and intelligent building devices. This practice plus a student project encompassing all topics builds on the IoT Fundamentals offering with Career-Ready skills application experience.

IoT Development Technician – 630 hours

Technical Skills

| IoT Device Interconnect Module - 180h *(includes Connecting Things course)* | IoT Programming Module – 190h *(includes NetAcad C++ and Python courses)* | IoT Data Administration, Control & Monitoring Module -190h *(includes Big Data & Analytics course and Hackathon)* |

Skills Certification

Soft Skills

| Integral Personal Development - 40h | Initiative and Self-Employment - 30h |

Instructor Training Best Practice

INTECAP conducted an intensive 10-month, on-campus training program for 14 instructors from across Guatemala to develop strong partners that will implement new Cisco accredited Academies across the country. These instructors were trained on the 3 new IoT Fundamentals courses, and all of the current Cisco courses (IT Essentials, CCENT, CCNA, CCNP Switching) and structured cabling. The instructors also participated with IoT students in a Hackathon challenge to develop IoT prototypes that support an Olympic sport. They experienced first-hand the skills application benefits hackathons provide and the hackathon execution methodology provided by Cisco. The INTECAP instructor trainers used the Cisco instructional methodology and facilitated the completion of associated course activities and assessments for of all these programs. INTECAP started the instructor training before the translated IoT Fundamentals courses were available in order to start teaching in Spanish immediately in Feb 2018 rather than waiting an additional academic year to start.

During this intensive training experience, the participants also identified the necessary competencies for a new IoT Technician career pathway (shown above). Graduates will be able to implement IoT solutions that improve processes and services to existing systems. They also determined the instructor competencies needed to teach each module. For the IoT Device Interconnect module, the Instructor must have related technical skills experience, including at least 3 years of experience in electronics and smart devices for intelligent buildings. For the IoT Programming module, in addition to the fundamental academic requirements, instructors must have solid knowledge of programming and connection of objects to the cloud. The third module, Data Administration, Control and Monitoring, requires 3 years of experience in managing relational databases and data control systems.

The instructor accreditation process for the new IoT Technician pathway used a blended approach: theory, virtual labs and an in-person hackathon. The focus was on the tools and motivation that builds self-confidence in teaching a new field. There were a wide variety of instructor backgrounds, such as information technology engineering, electronics, design, and programming. Each Study Group intentionally included a wide range of previous experience and expertise. INTECAP plans to hold a second instructor training program in the future for 80 participants.

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