

IoT Design and Validation Industry-Ready Student Certification Program

Introduction

IoT is an emerging technology that will define the future lifestyle. More interestingly, IoT does not only encompass software such as apps and data analytics but also the hardware to make everything work. Universities play major roles in equipping students with knowledge of tools and processes used in the industry today; producing industry-ready engineers who are highly employable. This program provides a collaboration between industry and universities to produce and recognize industry-ready engineers.

A key component of this certification program is the use of Keysight's IoT Applied Courseware. The Keysight IoT Design and Validation Industry-Ready Student Certification Program recognizes the student's comprehension of key IoT design, validation, and measurement concepts. It signifies that the recipient has:

- Passed an IoT-based university course augmented by at least one of Keysight Technologies' IoT Applied Courseware Module.
- Completed a required number of hours using the Keysight IoT kit to understand major IoT design concepts and considerations.
- Completed required experience in using Keysight instruments to make accurate measurements for component-level and system-level design validation.
- Been nominated by their professor for certification.

Keysight Requirements for Universities

- The university must adopt Keysight's IoT Applied Courseware to be eligible to participate in the IoT Design and Validation Industry-Ready Student Certification Program.
- The university must ensure students complete all IoT lab assignments in a specific module of the Keysight's IoT Applied Courseware where certification is being pursued.

Qualification Process for Universities and Students

- University completes and submits Keysight IoT Design and Validation Industry-Ready Student Certification Program application form.
- Keysight certifies that the university course and lab topics meet the program requirements.
- Keysight notifies the university of acceptance.
- Students are notified of the certification program by the course professor.
- At the end of the course/ labs, the Top 15% - 20% of students are eligible for certification.
- Class professor provides Keysight with names of students qualifying for certification based on class grade and quality of lab work.

Student Recognition

- Keysight verifies certification with a certificate.
- Keysight inserts student name into list on Keysight’s website: [University Student Certification Program | Keysight](#)
- Keysight will promote industry recognition of this program.
- Certified students will receive a digital badge that could be used to showcase their competencies.

Types of certification

These are stand-alone certificates depending on the module completed by the students.

Certification	Description
IoT System Design and Validation Fundamentals	IoT’s architecture, technologies and ecosystem understanding. Designing and developing an IoT-enabled embedded system.
IoT Wireless Communication and Compliance	Developing typical IoT applications with various types of wireless connectivity and compliance study, IoT device and network security learning.
IoT Precision Power Measurement and MEMS Sensors	Characterizing MEMS devices and measuring power consumption of IoT devices.

Course requirements

IoT System Design and Validation Fundamentals

Setting up a Keysight IoT development board

Basic software automation

Peripherals GPIO, PWM, LCD and Storage

Digital communication protocols

Measuring Current Consumption

IoT Device Cloud Computing

IoT Network and Cloud Security

Understanding Common IoT Data Layer Protocols

Selecting the right sensors for the right application

Student Project with IoT relevance

IoT Wireless Communication and Compliance

Overview and Principles of IoT Connectivity

Bluetooth[®] LE signal analysis

ZigBee[®] signal analysis

WLAN Design, Validation, Pre-Conformance and Pre-Compliance Testing

LoRA signal analysis

Bluetooth[®] Low Energy (LE) and Zigbee Modulation Analysis and Coexistence

IoT Network and Device Security

Exploring Device Protocol Request Response Cycle and Network Security

Student project with IoT relevance

IoT Precision Power Measurement and MEMS Sensors

Precision Power Measurement and MEMS Sensors

Power Measurement Fundamentals

Dynamic and Static Current Consumption Measurements (ZigBee Network or any other equivalent Transport layer protocol is acceptable)

Battery Run Down Test

Energy Storage Technology Awareness

Sensor Technology

Sensor Measurement Technique

Conserving Energy

Measuring Current Consumption

Student Project with IoT relevance

Acknowledgement

- Identification as among the best
- Confirmation of technical expertise
- Credentials identified through Keysight webpage and LinkedIn

Added value

- Equipped with industry- ready skills and knowledge
- Creating outstanding resumes
- Increases employment opportunities

Industry access

- Demonstrated value for industry

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.