Advanced IoT Teaching Lab Solution
Now Remote Ready!

End-to-end IoT Learnings, from Fundamentals to Real-world Design Considerations

The IoT revolution races on, and now educators and students alike can leap ahead with Keysight’s ready-to-teach advanced IoT teaching solution. Designed to teach students practical design and test techniques from the fundamentals of system design to wireless communication and power measurement, this solution also covers critical design considerations that is emerging with the evolution of the Internet of Things, such as device and network cybersecurity, radio certification and compliance, and power continuity.

All this content is not rooted in theory alone — the advanced IoT teaching solution comes with editable slides and lab sheets for the classroom and for the lab, and a training kit with detailed lab procedures that is designed to work hand-in-hand with industry standard test and measurement instruments and software, giving students the opportunity to work with the same equipment they would use when they are out in the industry.

Remote Advanced IoT Teaching Lab Solution
PW9112EDU PathWave Lab Operations for Remote Learning

Advanced IoT Teaching Lab Solution

- IoT Training Kit
  - Beagle Bone Green - 2.4G ZigBee, Digital and Analog sensors, Lora Module(wired)
- Courseware
  - Editable PowerPoint slides that cover 75+ hours of classroom sessions
  - Editable lab sheets, model answers, problem-based assignments able to covers 50+ hours of lab sessions
- Recommended Instruments and software
  - IoT system design and validation fundamental lab – Digital Multimeter and Oscilloscope
  - IoT wireless connectivity and network security lab – CXA signal analyzer, anechoic chamber, VSA software and X series application in WAN, Bluetooth and EMI
  - IoT precision power measurement and MEMS sensors lab – Digital multimeter, oscilloscope, power analyzer, 2-quadrant source, event detector and analysis software

Find us at www.keysight.com
### Module 1: IoT System Design and Validation Fundamentals

<table>
<thead>
<tr>
<th>Product number</th>
<th>Description</th>
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<tbody>
<tr>
<td>U3813A</td>
<td>IoT System Design and Validation Fundamentals applied courseware, with training kit and lab</td>
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<tr>
<td>U3814A</td>
<td>IoT System Design and Validation Fundamentals applied courseware, with training kit, lab and teaching slides</td>
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</tbody>
</table>

**Recommended instruments**

- 34465A¹: 6½ digit, performance Truevolt digital multimeter
- DSOX1204G: Oscilloscope: 70/100/200 MHz, 4 Analog Channels

Note: Other 34460 Series Truevolt DMMs models may be used, but 34465A is recommended as this model comes with a digitizing option for use with the IoT Sensors and Power Management applied courseware.

### Module 2: IoT Wireless Communication and Compliance

<table>
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<tr>
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<tbody>
<tr>
<td>U3815A</td>
<td>IoT Wireless Communication and Compliance applied courseware, with training kit and lab</td>
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<tr>
<td>U3816A</td>
<td>IoT Wireless Communication and Compliance applied courseware, with training kit, lab and teaching slides</td>
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**Recommended instruments and software**

- N9000B: CXA Signal Analyzer - Multi-touch, 9 kHz to 7.5 GHz (minimum 3 GHz required) Option B25 - Analysis Bandwidth, 25 MHz
- N6705C: DC Power Analyzer, Modular, 600 W, 4 Slots
- N6781A: 2-Quadrant Source/Measure Unit for Battery Drain Analysis, 20 V, ±1 A or 6 V, ±3 A, 20 W. Required 2 units in the courseware
- X8712AD: Event based detector
- KS833A2A: PathWave Event Based Power Analysis, Node Locked, subscription license

### Module 3: IoT Precision Power Measurement and MEMS Sensors

<table>
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<tr>
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<tbody>
<tr>
<td>U3817A</td>
<td>Precision Power Measurement and MEMS sensors applied courseware, with training kit and lab</td>
</tr>
<tr>
<td>U3818A</td>
<td>Precision Power Measurement and MEMS sensors applied courseware, with training kit, lab and teaching slides</td>
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**Recommended instruments and software**

- 34465A DMM: 6½ digit, performance Truevolt digital multimeter with high-speed digitizing and 2M memory
- DIG + MEM + 34138A
- DSOX1204G: Oscilloscope: 70/100/200 MHz, 4 Analog Channels
- N6141EM0E: Multi-touch UI X-Series measurement application license for EMI measurements with multi-touch UI

### Remote Advanced IoT Teaching Solution

<table>
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<tr>
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<tr>
<td>U3810REM</td>
<td>Add Remote Teaching Option for U3810A Advanced IoT Series</td>
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</tbody>
</table>

**Recommended instrument and modules**

- DAQ970A: Data acquisition system with USB and LAN
- DAQM901A: 20 Channel multiplexer
- DAQM903A: 20-Channel actuator/general purpose switch
- DAQM905A: Dual 4-Channel RF multiplexer 50 Ω

Note: To setup the lab in remote connectivity capability, you will be required both the U3810REM and U3900DAQ options. For U3900DAQ, you will need a DAQ970A mainframe and three modules DAQM901A, DAQM903A and DAQM905A for all the course modules (U3813A/14A, U3815A/16A, U3817A/18A). A U3810REM kit is required for each training kit to make the remote connectivity ready.

More Information: [https://www.keysight.com/find/AdvancedIoT](https://www.keysight.com/find/AdvancedIoT)

For more information on Keysight Technologies’ products, applications, or services, please contact your local Keysight office.

The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)