



## Introduction to Metrology with collaborative robots and the Q-Span® Workstation Kit

### ENHANCE YOUR MANUFACTURING EDUCATION PROGRAM WITH METROLOGY, ROBOTICS, AND QC AUTOMATION COURSE CONTENT

Today's manufacturing companies increasingly use:

- Robotics and automation to mitigate labor shortages
- Quality control (QC) integrated into every process
- Real-time quality data to adjust manufacturing operations

Students with skills in these areas will have an edge in the manufacturing workforce.

### Ready-to-use, hands-on course materials

These ready-to-use course materials introduce students to metrology and QC automation using collaborative robots. Course materials include presentations, videos, testing, and hands-on learning.

Students will use a Q-Span® Workstation Kit with a Universal Robots cobot. They will learn to set up, program and run the system to perform automated metrology tasks.

They will learn metrology concepts including units of measurement, precision, and traceability to standards.

The 8-hour course includes:

- Instructional presentations with videos
- Hands-on labs and capstone team project
- Module quizzes and a final exam
- Q-Span Workstation Kit hardware guide
- Instructor guides with notes, key messages, tips and FAQs for each module

The course package includes a one-time training for the instructor in the use of the course materials, cobot, and Q-Span Workstation.



### Why this course?

Manufacturers of all sizes are deploying **collaborative robots (cobots)** for automation. Cobots offer ease of use, rapid deployment, and the ability to work safely alongside humans in small spaces.

*Hands-on experience with cobots gives your students an edge in the workforce.*

Manufacturers continue to integrate **quality control (QC) processes** into every aspect of their operations, from the production floor to the quality lab. **Metrology**, or the study of measurement, is a cornerstone of quality for manufacturers.

*Understanding the basics of metrology gives your students an edge in any manufacturing role.*



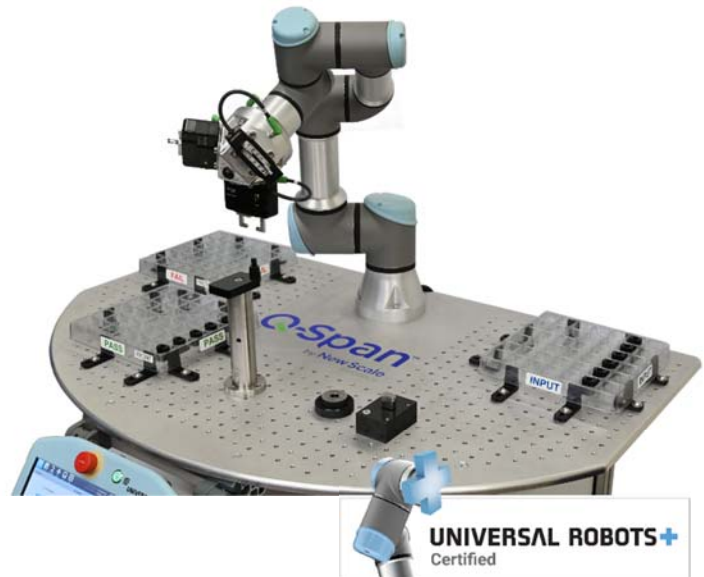
## Hardware requirements

One Q-Span Workstation Kit is recommended for every two students in the course.

Each Q-Span Workstation Kit includes:

- A Universal Robots (UR) cobot equipped with three New Scale Robotics cobot gripper-caliper tools
- Example parts with part trays, measurement fixtures and NIST-traceable reference fixtures
- A cobot teach pendant with URCaps software to control the cobot and run metrology programs
- PC software to log measurement data for analysis

[Download the product sheet](#) for more information about the Q-Span Workstation Kit.



## Experience recommendations

We recommend that instructors and students have some experience with UR cobots before starting this course. This may be hands-on experience in a lab, or formal training through UR's online academy training simulator or educational certification program.

The Q-Span Workstation Kit includes a Universal Robots (UR) cobot and everything you need to provide hands-on training in using the cobot for automated metrology. Sample programs, which run on the UR teach pendant, guide student learning.

## Course outline

The 8-hour course includes eight modules with presentations, videos, hands-on lab exercises and testing.

**Module 1:** What is metrology?

**Module 2:** Tools for measurement

*Lab: Practice measurements*

**Module 3:** Anatomy of a Q-Span Workstation

**Module 4:** Programming: Q-Span Workstation Cell Setup

*Lab: Robot teach pendant*

**Module 5:** Programming: Workstation Basic Functions

*Lab: Programming the workstation*

**Module 6:** Full-Scale and Comparative Measurements

*Lab: Making measurements including calibration and references*

**Module 7:** Batch processing and data collection

**Module 8:** Capstone team project

*Lab: Real-world automated metrology process*

**Module 9:** Final exam

**Module 10:** Supplemental materials

[Download the course overview](#) for more details.



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