

ATCM-2720: TRIMBLE ROBOTIC TOTAL STATION CERTIFIED OPERATOR COURSE

Cuyahoga Community College

Viewing: ATCM-2720 : Trimble Robotic Total Station Certified Operator Course

Board of Trustees:

June 2022

Academic Term:

Fall 2022

Subject Code

ATCM - Appd Indus Tech-Cement Masonry

Course Number:

2720

Title:

Trimble Robotic Total Station Certified Operator Course

Catalog Description:

Covers the operation and usage of a Robotic Total Station (RTS) as it applies to the construction industry. Setup and layout procedures will be demonstrated and practiced using Trimble Field Link as the specific operational software.

Credit Hour(s):

3

Lecture Hour(s):

3

Requisites

Prerequisite and Corequisite

Departmental approval: Admission to Apprenticeship program.

Outcomes

Course Outcome(s):

Relate the Field Link work mode icons to the operational usage of a Trimble RTS.

Objective(s):

1. Examine Trimble Field Link software and the 4 work mode icons.
2. Identify each icon and its usage with the device.
3. Relate how each applies to the operation and usage of the RTS.
4. Summarize the work mode icons and their functions.

Course Outcome(s):

Illustrate the use of the Device work mode icon and the Setup and Connection of an RTS.

Objective(s):

1. Recognize the Device work mode icon and the procedure to correctly setup and connect to an RTS.
2. Describe the order of operations to correctly setup and connect an RTS.
3. Rewrite a personal order of operation list.
4. Demonstrate the procedure of setup and connection to an RTS using the Device work mode icon.

Course Outcome(s):

Explain the Create and More work mode icons and how they relate to each other.

Objective(s):

1. Examine the Create work mode icon and its 6 functions.
 2. Compare the functions of the More work mode icon with the Create work mode icon.
 3. Examine the More work mode icon and its 7 functions.
 4. Develop a new job using a model provided by their instructor.
 5. Modify this job and create points to use for layout.
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Course Outcome(s):

Implement the usage of the Measure work mode icon.

Objective(s):

1. Summarize the 5 functions of the Measure work mode icon.
 2. Choose the correct method to layout the points students created in their job.
 3. Produce the layout points from the job they created.
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Course Outcome(s):

Produce their skills using Field Link software and the Trimble RTS.

Objective(s):

1. Demonstrate their skills in a physical examination.
 2. Cite the correct methods in a written examination.
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Methods of Evaluation:

1. In Class Assignments
2. Tests
3. Hands on Projects
4. Homework

Course Content Outline:

1. Field Link Software-Overview
 - a. Examine the 4 work mode icons
 - i. Device
 - ii. Create
 - iii. More
 - iv. Measure
 - b. Uses of the 4 work mode icons
 - c. Application of the 4 work mode icons
 - i. Device - setting up an RTS
 - ii. Create - creating and managing points
 - iii. More - managing jobs and files
 - iv. Measure - layout and collection of points
 - d. Summary of the icons and their functions
 - i. Examine a pre-populated work mode icon infographic
 - ii. Create a work mode icon infographic of their own
2. Setting up and Connecting an RTS using the Device work mode icon
 - a. Device work mode icon and its functions
 - i. Connection
 - ii. Prism Settings
 - iii. Device Settings
 - iv. Measure Reference Elevation
 - v. Setup
 - b. Order of Operations for Device Setup
 - i. Tripod Setup
 - ii. Device Leveling
 - iii. Tablet Connection
 - iv. Prism Connection

- v. Control Point Setup
 - 1. No Data
 - 2. Resection
 - 3. Known Point
 - c. Creation of a Student Order of Operations
 - i. Create an Order of Operations from a provided template
 - ii. Reference the correct procedure from the original Order of Operations
 - d. Demonstrate the process of Setup and Connection of an RTS using the Device work mode icon in the field
 - i. Tripod Setup
 - ii. Device Leveling
 - iii. Tablet Connection
 - iv. Prism Connection
3. Explaining the functions of the Create and More work mode icons and their relationship to one another
- a. Examine the Create work mode icon and its 6 functions
 - i. Plan
 - ii. Linework
 - iii. Point Manager
 - iv. From Model
 - v. Grid
 - vi. Pattern
 - b. Compare the functions of the Create and More work mode icons.
 - i. Map - Plan
 - ii. Jobs - Linework
 - iii. Point Manager - Reports
 - iv. Trimble Connect - From Model
 - c. Examine the More work mode icon and its 7 functions
 - i. Map
 - ii. Jobs Reports
 - iii. Trimble Connect
 - iv. About
 - v. Minimize
 - vi. Exit
 - d. Develop a new job using a model provided by the course instructor
 - i. Import a model
 - ii. Place the model
 - iii. Scale the model
 - e. Modify this job and create points to use for layout
 - i. Create end, mid, and intersection points
 - ii. Create multiple offset points
4. Implement the usage of the Measure work mode icon
- a. Summarize the 5 functions of the Measure work mode icon
 - i. Layout
 - ii. Collect
 - iii. Wall Penetration
 - iv. Surface
 - v. Layout Plane
 - vi. Settings
 - b. Choose the correct method to layout the points students created in their job
 - i. Layout points
 - ii. Layout line
 - iii. Layout to a line
 - iv. Layout Arc
 - c. Produce the layout points from the job they created
 - i. Choosing the correct point
 - ii. Following the Direction Bar
 - iii. Using Visual Layout
 - iv. Using the Bullseye Mode
5. Produce their skills using Field Link software and the Trimble RTS

- a. A demonstration of the necessary skills will be required to successfully complete a physical examination
 - i. A knowledge assessment form will be used to evaluate the correct procedures of use of the RTS in a physical examination
 - ii. A written examination of 75 questions will be given to interpret a student's skills and knowledge

Resources

Trimble Navigation Limited . *Trimble RTS Series Total Station User Guide*. January 2013.

Trimble, Inc. *FieldLink User Guide v6.1*. October 2021.

Resources Other

- <https://www.trimble.com>
- <https://www.learn.trimble.com>

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