# CERTIFICATE OF COMPLETION

## CORE TRAINING

Certificate number: E202302112327480
Robot type: e-Series

## Sanjar Normuradov

10. February 2023

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Olympus Controls

**UNIVERSAL ROBOTS**

# CURRICULUM

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**Module 1: Pick-and-place application**

- Moving the robot by using the "Move" tab
- Knowledge about the I/O Connections and how-to setup
- How to configure the TCP
- How to setup a Home Position
- Basic knowledge about URCaps
- Apply skills acquired in the online training to an actual robot
    - Programming a Pick-and-place application

**Module 2: Safety settings**

- Configuration and use the available safety settings
    - Robot limits
    - Joint limits
    - Safety planes
    - Tool position
    - Direction
    - Configurable Inputs/Outputs
    - Safe Home

**Module 3: Optimize a pick-and-place application**

- Basic knowledge about singularities
- The different movement types and how to use them
    - MoveJ
    - MoveL
    - MoveP
    - MoveC
- How to configure a blend radius
- Configuration of speed and acceleration of movements and individual waypoints
- How to use the Time to investigate the cycle time
- Creation of a clear program structure

**Module 4: Easy startup**

- Configuration of a default program that starts automatically when the robot powers up
    - Programming a BeforeStart-Sequence
    - How to program relative Waypoints
    - How to setup the remote control
    - Setup a default program

**Module 5: Program flow**

- Configuration and use if-else commands
- Basic knowledge about variables
- How to program a subprogram

**Module 6: Palletizing**

- Configuration and usage of the palletizing template

**Module 7: Force control (simple)**

- Knowledge about the Force control (simple)
- Knowledge about and how to program Threads
- Configuration of the Force control (simple)
- Using the data of the integrated force and torque sensor in a program

**Module 8: Process application with operator selection**

- Configuration of the TCP, orientation and payload using the available wizards
- Programming loop statements
- Prompt operator for variable input
- Configuration and usage of switch-case commands
- Catching and handling an invalid entry

**Module 9: Flexible redeployment**

- How to create a coordinate system (Plane)
- How to program relative to a coordinate system

**Module 10: Implementation plan**

- A structured method (ten steps) to identify and evaluate the complexity of the automation capabilities in your cobot

**Module 11: Online resources**

- Free software updates
- User, service and script manuals
- CAD data of the robot, Teach Pendant and controller
- Offline simulator

**Quiz**

- Completion of the UR Academy Quiz Passing score of 84.20

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