Automated Welding with SCORBOT-ER4u (V)

Catalogue Number	77-3001-0000
Category	Robotics
Duration	15 Hours
Software Supplied	RoboCell

Activity 1: Introduction

- What is Welding?
- Automated Welding
- Arc Welding
- First Aid for Welding

Activity 2: Automated Welding Simulation Software

- The Automated Welding Workcell
- RoboCell for Welding Software
- RoboCell Window Components
- RoboCell Working Modes
- Task: Running RoboCell
- 3D Image Window
- Task: Adjusting the View of the Robotic Workcell
- Task: Running an Automated Welding Cycle

Activity 3: Recording Robot Positions

- Manipulating the Robot
- Inventory and Safety Checks
- Task: Moving the Robot
- Moving the Robot
- Record and Teach Commands
- Task: Recording and Teaching Positions
- Absolute and Relative Positions
- Task: Recording Relative Positions
- Task: Saving a Project

Activity 4: Basic Robotic Programming Tools

- Send Robot to Object
- Inventory and Safety Checks
- Task: Sending the Robot to Objects
- Go to Position Options
- Task: Programming a Simple Program
- Remarks
- Task: Adding Remarks to the Program
- Variables
- Task: Adding Variables to a Program

Activity 5: Advanced Robotic Programming Tools

- Outputs
- Inventory and Safety Checks
- Task: Output Control Commands
- Task: Programming With Outputs
- Task: Programming Output Operations
- Subroutines
- Task: Programming a Subroutine

Activity 6: Programming Gravity Feeder Operations

- Welding Joints
- Steps Required to Weld a T-Joint
- Gravity Feeder
- Automated Welding Cell Positions
- Inventory and Safety Checks
- Task: Recording Positions for Tending the Feeder
- Task: Defining Variables for Programming a Feeder
- Subroutines
- Task: Programming a Feeder Subroutine
- Task: Running and Evaluating the Program

Activity 7: Programming Jig and Gun Operations

- Robot Operation in the Automated Welding Cell
- Jigs
- Automated Welding Cell Positions
- Inventory and Safety Checks
- Task: Recording Positions for Loading Parts in the Jig
- Task: Programming a Jig Subroutine
- Welding Gun
- Task: Recording Positions for Retrieving & Returning the Gun
- Task: Programming the Robot to Retrieve & Return the Gun
- Task: Running and Evaluating the Program

Activity 8: Programming Welding Operations

- Robot Operation in the Automated Welding Cell
- Automated Welding Cell Positions
- Welding Technique
- Inventory and Safety Checks
- Task: Recording Positions for Welding a T-Joint
- Activating the Welder
- Duration
- Task: Programming the Robot to Weld a T-Joint
- Task: Running and Evaluating the Program
- Welding Safety
- Task: Controlling the Welding Booth Walls

Activity 9: Programming a Fully Automated Welding Cycle

- Robot Operation in the Automated Welding Cell
- Automated Welding Cell Positions
- Inventory and Safety Checks
- Task: Recording Positions for Unloading the Jig
- Resetting Variables
- Task: Programming the Robot to Unload the Jig and Place the Parts for Cooling
- Cooling the Welded Part
- Task: Programming the Robot to Perform a Fully-Automated Welding Cycle
- Task: Running and Evaluating the Program
- Weld Analysis
- Task: Analyzing the Weld

Activity 10: Programming a Butt Joint Weld

- Welding a Butt Joint
- Robot Operation in the Automated Welding Cell
- Inventory and Safety Checks
- Task: Recording Positions for Welding a Butt Joint
- Task: Editing the Welding Program
- Task: Welding a Butt Joint

Activity 11: Preventing Thermal Deformation

- Homing the Axes
- Emergency Aborts
- Preventing Thermal Deformation in Butt Welding
- Task: Editing the Welding Program to Prevent Thermal Deformation

Activity 12: Changing Parameters: Inert Gas Shield

- Important Welding Parameters
- Welding Settings Dialog Box
- Shielding Gas
- Task: Welding a Butt Joint With Shielding Gas
- Task: Welding a Butt Joint Without Shielding Gas
- Shielding Gas: Results and Conclusions
- Voltage
- Task: Welding a Butt Joint at the Optimal Voltage
- Task: Welding a Butt Joint at Varying Voltages
- Adjusting Voltage: Results and Conclusions

Activity 13: Changing Parameters: Robot Speed and Feed Rate

- Review of Important Welding Parameters
- Feed Rate
- Task: Welding a Butt Joint at the Default Feed Rate
- Task: Welding a Butt Joint at Varying Feed Rates
- Results and Conclusions
- Robot Speed (Rate of Travel)
- Task: Welding a Butt Joint at the Default Rate of Travel
- Task: Welding a Butt Joint at Varying Rates of Travel
- Results and Conclusions