Advanced Robotic Programming with the SCORBOT-ER 4u

Catalogue Number	3048-0000
Category	Robotics
Duration	15 Hours

Activity 1: Review

- Objectives
- The Use of Robots in Industry
- The Use of Simulation Software
- RoboCell Window Components
- RoboCell Working Modes
- Manipulating the Robot
- Basic Programming Tools
- Review

Activity 2: Programming with Subroutines

- Objectives
- Materials
- Subroutines
- Task: Running RoboCell and Recording Positions
- Subroutine Commands
- Task: Programming with Subroutines
- Task: Running and Evaluating the Program
- Task: Changing the Order in which Subroutines are Run
- Review

Activity 3: Digital Inputs

- Objectives
- Materials
- Inputs and Outputs
- Task: Running RoboCell and Manually Switching Digital Inputs
- Jump To and Label Commands
- Task: Programming with Labels and Unconditional Jumps
- Programming with Unconditional Jumps
- Conditional Jump Command
- Task: Programming with Inputs and Conditional Jumps
- Review

Activity 4: Digital Outputs

- Objectives
- Materials
- Inputs and Outputs
- Experiment Table
- Task: Sending Output Signals Manually
- Task: Programming with Output Signals
- Task: Producing Output Signals During Robot Operation
- Review

Activity 5: Delivering Materials with a Conveyor Project

- Objectives
- Materials
- Conveyors in Robotic Workcells
- Polling
- Delivering Materials with a Conveyor
- Stop Conveyor and Start Conveyor Commands
- Task: Announcing the Arrival of an Object on the Conveyor
- Task: Teaching Positions and Programming
- Task: Running and Evaluating the Program
- Review

Activity 6: Conditional Branching

- Objectives
- Materials
- Review of Inputs and Outputs
- Conditional Branching
- Task: Recording Positions for a Sorting Program
- Task: Programming a Sorting Task
- Task: Running and Evaluating the Sorting Program
- Review

Activity 7: Programming with Conditional Branching – Project #2

- Objectives
- Materials
- Review of Conditional Branching
- Storing Equipment Using the If Command
- Sampling Inputs
- On Input Interrupt # On Jump Command
- Task: Running RoboCell and Recording Positions
- Task: Programming
- Task: Running and Evaluating the Program
- Review

Activity 8: Analog Inputs and Outputs

- Objectives
- Materials
- Analog and Digital Signals
- Task Definition
- Task: Running RoboCell and Recording Positions
- Programming Tools
- Task: Programming
- Task: Running and Evaluating the Program
- Task: Modifying the Program
- Review

Activity 9: Loops and Counters

- Objectives
- Materials
- The Set Variable (SV) Command
- Task: Using a Variable Value to Program Conditional Jumps
- Using a Conditional Loop
- Task: Using a Conditional Loop
- Task: Using Controller Inputs in a Conditional Loop
- Programming Challenge: Combining Conditions
- Review

Activity 10: Contact and Non-Contact Sensors

- Objectives
- Materials
- The Robotic Cell
- Task: Activating the Photoelectric Sensor
- Task: Programming a Task Using the Proximity Sensor
- Task: Recording Robot Positions at the Parts Feeder and Bin
- Task: Transporting Material from Feeder to Bin
- Task: Observing the Use of Multiple Sensors Together
- Review

Activity 11: Programing a Sorting System Project

- Objectives
- Materials
- Sorting Blocks from a Conveyor
- Gripper Sensor
- Task: Recording Positions
- Task: Programming the Variables
- Task: Writing the Program
- Task: Running the Program
- **Post-Test**