**Collaborative Robotics Technician**

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| Function Areas | | Specific Tasks | | | | | | | |
| 1. **Install Robot** | | Connect robot mechanically | Connect robot electronically | Connect robot pneumatically | Reteach points | Install a program | Verify safety functionality (wiring, response, checklist) |  |
| 1. **Move Robot** | | Determine disassembly needs | Determine rigging requirements for movement (per manufacturer’s manual) | Secure robot for shipping (build pallet, etc., when necessary) | Connect robot mechanically | Connect robot electronically | Connect robot pneumatically | Reteach points |
|  | | Verify safety functionality |  |  |  |  |  |  |
| 1. **Maintain Robot** | | Consult manufacturer’s manual for preventive maintenance checks and services | Save current program prior to conducting new operations | Disassemble robot | Grease points | Change seals on pneumatic tooling | Replace filters | Replace Belts |
|  | | Replace joints | Recalibrate robot | Monitor & toggle I/O | Reteach points | Maintain a current backup | Perform recovery operations from backups | Verify safety functionality |
| 1. **Troubleshoot robot operations** | | Follow the steps/logic to determine problem | Determine the root cause (mechanical, electrical, pneumatic, etc.) | Communicate with operator | Change machine modes (auto/manual) | Run robot at variable speeds to identify mechanical issues | Manipulate machine in manual mode | Start, stop, and clear errors |
|  | | Locate a bad sensor | Determine sensor trouble | Recover from a crash | Trace and correct faults in area scanners, light curtains, and load cells | Verify safety functionality |  |  |

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|  | Occupational Task Analysis Panel Members |  |

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| Maintenance Supervisor | Core Tech |
| Robotics Field Service Engineer | Cross Robotics & Machine Automation |
| Controls Engineer | Brooks Machine & Design, Inc. |
| Controls Engineer | Brooks Machine & Design, Inc. |
| President | Mertek Solutions |
| Controls Manager | Mertek Solutions |
| Sales Support Engineer | SCHUNK |

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| **Analysis Facilitator:** | Jay Jackson |
| **Analysis Coordinator:** | Rachel Haskins |
| **Analysis Recorder:** | HollyAnn Nye Rogers |

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| Collaborative Robotics Technician | **Collaborative Robotics Technician installs, moves, maintains, and troubleshoots collaborative robots in the field.** |

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| Knowledge | Control Circuits  Industrial/Mechanical Maintenance  Basic Physics  Read a Schematic  Basic Electrical Wiring  Basic Programming Logic  Basic Motors and Encoders  Pneumatic Principles and Schematics  Gearing (mechanical)  Basic Automation Products (core components) | Basic Data Networking  Basic Tools (i.e., multimeter)  Safety Standards and Robotic Industry Association (RIA) Standards  Cartesian Coordinates and Frames  Ability to Use Google  Arc Flash Suits  Linear Devices (screws, belt drives, drives, rack and pinion)  How Machine Runs in Auto |

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| Skills | Basic Wiring (including soldering)  Mechanical Skills  Ability to Read a Multimeter  Problem-Solving Skill | Soft Skills   * Customer Interaction * Communication   Basic Computer Skills |

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| Equipment | Screwdrivers  Allen Wrenches (SAE & Metric)  Needle-Nose Pliers  Digital Multimeter  Wire Strippers  Lockout/Tagout Kit  Torque Wrench  Safety Glasses  Ear Plugs | USB Drives  Cables (Ethernet, Serial, USB)  Box Cutter  Adjustable Wrenches  Soldering Kit  Rubber Mallet  Cell Phone Camera  Flashlight |

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| Instruction Equipment (needed by the college) | Laptop  Simulation Software (Robot Studio, Yumi)  Light Curtains and Area Scanner  Safety Hardware Fencing  End-of-Arm Tooling Options (grippers, vacuum cups, magnets)  Wiring Cabinet with Electrical Terminal  Blocks, HMI, PLC, Vision/Camera | Air Supply (compressor)  3D Printer  Safety Relays  Tool Changers  Compliance Device (tool on the robot arm)  Push Buttons and Switches/Relays  Stack Light |

**Collaborative Robotics**

**Technician**

**Occupational TASK ANALYSIS**

### Developed by

**Wake Technical Community College**

**Corporate and Business Solutions**

**Robotics Awake**

**9101 Fayetteville Road**

**Raleigh, NC**

**919-335-1002**

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