



RCSA Industry Competency and Certification Exams

RCSA Certification Exam Skill Sets: Certified Industrial Robotics Programmer (CIRP)

Today, industrial robots are used in almost every aspect of manufacturing: building car parts, food, cut plastic, package consumer goods and bolster progress in the medical and pharmaceutical markets, office furniture, sporting equipment, cell phones, etc.

The single greatest challenge for employers is filling vital roles with highly skilled and certified people.

Robotics Programmers can gain a competitive edge in their industries with CIRP Certification. Through certification you can demonstrate your knowledge and skills to prospective employers and advance your career opportunities.

Passing the examination requires a working knowledge of the performance tasks listed below.

| Skill Sets | Fundamentals |
|--|---|
| History of Automation | <ul style="list-style-type: none"> » Background of Robotics – Timeline » Recognizing a robotic application » Robotic Manufacturers » PLC Manufacturers |
| Introduction to Motoman MRC and Generic 5 Axis Labvolt Robot | <ul style="list-style-type: none"> » Inputs and Outputs » Basic programming on a 5 axis Lab Volt robot » Understanding the toolbar » Motion types » Point recording » Special playback modes » Coordinate systems |
| PLC Programming | <ul style="list-style-type: none"> » Overview of PLC hardware » Theory of operation » Significance of scan time » Introduction to LADDER LOGIC Programming software » Setting up a project » Addressing and internal data structures » Instruction toolbar » Online and Offline Programming » Basic Instruction Set » Uploading and Downloading » Copy and Paste » Counters » Timers |

| Skill Sets | Fundamentals |
|------------|---|
| Panasonic | <ul style="list-style-type: none"> » Safety » Background of Robotics – Timeline » Robot Terminology (Definitions) » Castings, Servo Motors, Drives and Controls » Types of End Effectors (Grippers, Torch's etc.) » Powering Up / Powering Down » Teach Pendant Keys / Menus » Robot movement using various coordinate systems » Teaching Linear, Circular and Weaving Programs » Running various programs from the Teach Pendant » Performing Robot TCP (Tool Center Point) » Integration of the Robot to External Devices » Protecting / Backing Up Robot Data and Files » Creating and Operation of Master Programs » Welding Technology including Touch Sensing and Tracking » Various applications including Arc Welding, Spot Welding, Handling and Palletizing |
| ABB | <ul style="list-style-type: none"> » Safety » Know and explain the history of ABB Robotics, its growth and its place in the world market » Safety precautions used while programming and operating » Operating controls and indicators on the robot controller » Positioning the robot by use of joystick control » Program creation procedures » Proper programming and modification techniques » Decision-making » Program Loops » Operator Dialogue to Teach Pendant » Functions (Offset, Re-tool, CrobT) » Advanced programming instructions and uses » Input/Output interfacing between the S4C Plus robot and controller and peripheral equipment |

| Skill Sets | Fundamentals |
|------------|---|
| Motoman | <ul style="list-style-type: none"> » Safety » History and Growth of Robotics in Manufacturing » Fundamentals of Robotics - definitions, characteristics, terminology » Robot Anatomy - coordinates, axes » Major Drive Systems » End Effectors » Part Delivery and Orientation » Overview of Applications - ARC WELDING, HANDLING, other applications » Reliability, Maintenance and Safety » Robot Operations - how to move robot, teach jobs, edit jobs (using VRCs and actual XRCs) » Commands include: <ul style="list-style-type: none"> - ARCON - ARCOF (using files and inline instructions) - ARCSET - ARCCTS - ARCCTE - Weaving and reference points - Shifting |