



Global Robot Specifications (GRS) Course

(Version 6.0)

Course No. GCRW8103, (LMS: 34043)

Duration 2 days

Pre-Requisites No Pre-Requisites

Objectives Upon successful completion of this course, participants will obtain an understanding of the core GM robot specifications which state the requirements for processing, integration, and interfacing of a robot used in different GM manufacturing applications. **NOTE:** This course is not a programming or troubleshooting course. This type of training should be obtained directly from the manufacturer of the robot.

The following GM Specifications are covered in this course:

- Robot Technical Specification, out of the box content GRS-1
- Robot Rules of Process, GRS-2
- Global Robot Integration, GRS-3
- GRS-4 Standard Robot Interface PLC Interface
- GRS-4 Standard Robot Interface, Section B1: Resistance Weld Controller
- GRS-4 Standard Robot Interface, Section B2: Resistance Weld Dense Pack Interface
- GRS-4 Standard Robot Interface , Section B3: Integrated Servo Gun
- GRS-4 Standard Robot Interface, Section C: Dispense Interface
- GRS-4 Standard Robot Interface, Section D: Stud Weld Interface
- GRS-4 Standard Robot Interface, Section E: Material Handling Interface

In addition the student will be exposed to a variety of robot set-up and configuring procedures using the Fanuc Setup Wizard that can be used for a variety of GM manufacturing applications.





Course Outline

There are a total of 4 modules taught over a 2 day period for this course. A certification test is proctored at the end of the last day. The topics covered for each module are identified below.

Module	Content	Delivery Method	Time (Hours)
1 - Robot Processing Fundamentals	<ul style="list-style-type: none">• Global 4 Robot Specification• Robot Safety• Payload analysis and robot selection overview.• Dual Check Safety• Robotic cell timing before simulation• Robot Rules of Process• Process/Function Limits• Robot / Cell Controller Physical Interface• Path Control Signals• Style Code and Option Code Usage• Path Segment Usage• Decision Code Usage• Exercises	Lecture	3
2 – Robot Integration	<ul style="list-style-type: none">• Robot Integration• Interference Zones• TCP• Load Data Setup• Collision Detection Setup• Mastering• Application Setup• Electrical and Pneumatic Connections• Exercises	Lecture	3
3 - Standard Robot Interfaces	<ul style="list-style-type: none">• Cell Controller Interface• Resistance Weld Controller Interface• Resistance Weld Dense Pack Interface• Integrated Servo Gun Interface• Dispense Interface including Tool Changer• Material Handling Interface• Stud Weld Interface• Exercises	Lecture	7



Module	Content	Delivery Method	Time (Hours)
4 – GRS Robot Exercises	<ul style="list-style-type: none">• GM Setup Wizard Procedure• Backup All Procedure• Controller Image Backup/Restore Procedure• Cold Start Procedure• Controlled Start Procedure• Robot Held Servo Gun Procedure		1
Assessment	Certification Test	Test	2



Demonstration/Activity/Exercise

Listed below is a summary of the instructor demonstrations, lecture hands-on activities, and student exercises for the course. For instructor preparation purposes, unique equipment and software required for completing a particular item is shown in the right column.

Module	Item (student exercises are noted in bold)	Unique Equipment & Software required
Module 1: Robot Processing Fundamentals	Exercise 1.1: Rough Cycle Time	
	Exercise 1.2: Draw a Robot Path	
	Exercise 1.3: Draw a Robot Path	
	Exercise 1.4: DCS	
Module 2: Robot Integration	Exercise 2.1: Select Interference Zones	
	Exercise 2.2: Label the TCP axis	
Module 3: Robot Interfaces	Exercise 3.1: Robot Cell Interface	
	Exercise 3.2: Resistance Weld	
	Exercise 3.3: Dispense Interface	
Module 4: Robot Set-up Procedures	No Exercise	