Kawasaki Robotics (USA), Inc.
Training Course Catalog

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Training at Kawasaki Robotics (USA), Inc.

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At Kawasaki we recognize the advantage to our customers having well trained personnel that enable them to optimize the performance of their robots and manufacturing systems. Having a professionally trained staff is a valuable asset and plays a significant role in reducing production costs within a company.

Kawasaki training includes comprehensive documentation and is hands-on with a low student to equipment ratio to ensure "learning by doing". Courses range from basic introduction to robotics, including programming and operation, to fully detailed repair and maintenance instruction. We cover most common robotic process skills and even have the ability to customize courses to meet customer's individual needs.
In short, Kawasaki training programs ensure your staff is confident working with our robots and enable you to get the most out of your equipment investment.

We offer complete, company-wide, training programs for:

- ❖ Maintenance and Service Personnel.
- ❖ Production Operators.
- ❖ Programmers, Setters and Team Leaders.
- ❖ Control System Engineers.
- ❖ Process Engineers.
- ❖ Engineering, Application and Project Personnel.
- ❖ Training Instructors.
- ❖ Management and Supervision.

Kawasaki's training programs help:

- ❖ Improve quality and performance to maximize your return on your system investment.
- ❖ Increase system up time (MTBF).
- ❖ Reduce Mean Time to Repair (MTTR).
- ❖ Save operating time, expenses and materials.
- ❖ Improve employee safety, skills, confidence and morale.

In this directory, we have provided an overview of each of our standard courses. Each overview contains objectives, target audience, and recommended minimum skill prerequisites. In each case, the training is accomplished by combining classroom presentation, using state-of-the-art equipment and instructor-led workshop exercises. Up to 50% of the class consists of hands-on training on the robot or subject equipment.

If your requirements differ from the standard classes detailed, please do not hesitate to contact us so that we can meet with your team and establish a training program specifically for your company.

Kawasaki Training Locations
North American Training Center, Wixom Michigan

Class Schedule
Our class schedule is available at https://robotics.kawasaki.com/en1/training/course/
Classes are also scheduled on an as-needed basis. Please contact us for currently available classes and openings. The Training Center is closed on all official state and federal holidays.

We offer select training courses at our Satellite Offices in Louisville Kentucky and San Antonio Texas. These courses are scheduled on an as requested basis. Please contact our training coordinator for your training requirements

Contact Information
Kawasaki Robotics (USA), Inc.
28140 Lakeview Drive
Wixom, Michigan 48393

Training Coordinator
248.446.4297
Email: training@kri-us.com

Web Address https://robotics.kawasaki.com/en1/training/

Driving Directions
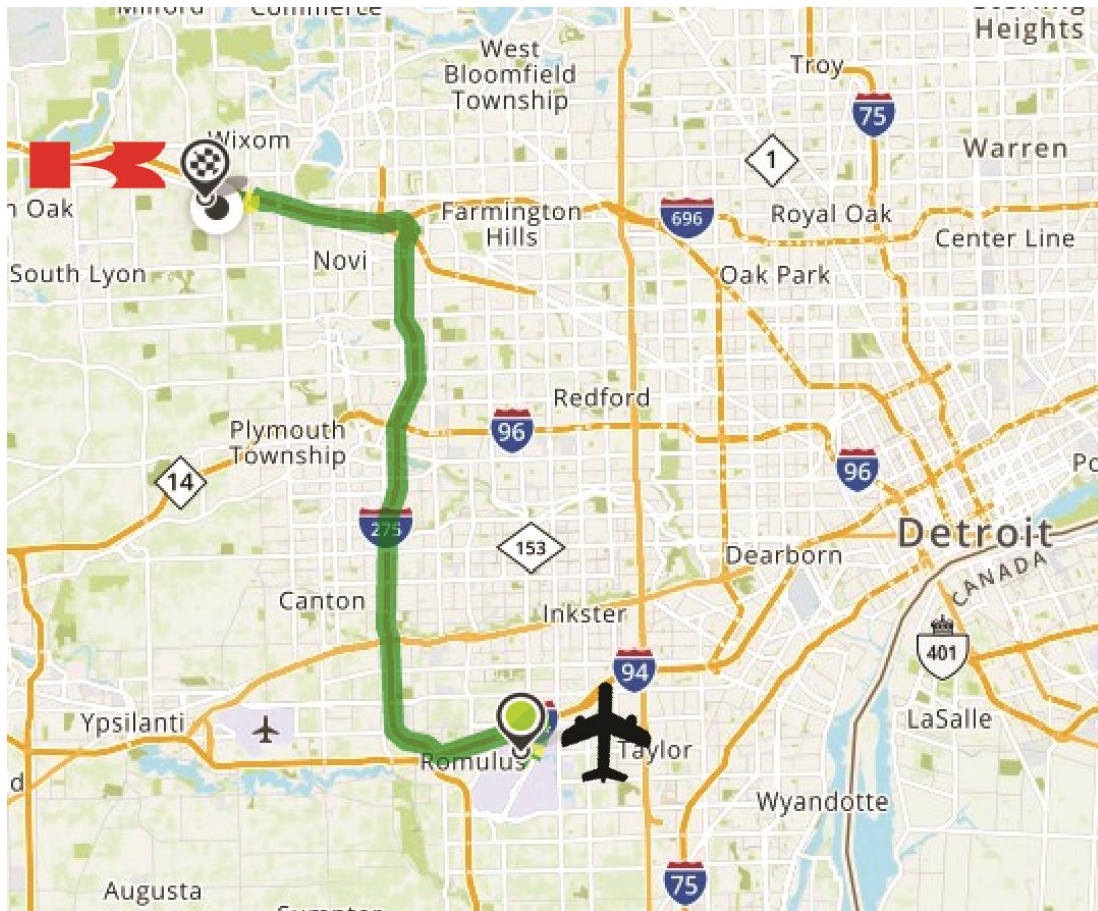
Directions from Detroit Metro Airport (DTW) to Kawasaki Robotics:
1. Start going toward the AIRPORT EXIT on WILLIAM G ROGELL DR (0.0 miles)
2. Continue on MERRIMAN RD (0.4 miles)
3. Take the I-94 WEST ramp toward CHICAGO (0.7 miles)
4. Merge on I-94 WEST (2.9 miles)
5. Take the I-275 exit toward FLINT/TOLEDO, exit #194 (0.2 miles)
6. Continue on I-275 NORTH RAMP toward FLINT (0.7 miles)
7. Merge on I-275 NORTH (12.3 miles)
8. Continue on I-96 WEST/I-275 NORTH (5.1 miles)
9. Take the I-96 WEST exit toward LANSING (2.4 miles)
10. Merge on I-96 WEST (4.4 miles)
11. Take the WIXOM RD exit #159; turn left (South)
12. Continue on WIXOM RD (0.3 miles) to Grand River Ave.
13. Turn right on Grand River; go approximately 1.5 miles to Automation Blvd., turn left (South)
14. Follow Automation Blvd. 0.1 miles, turn left on Lakeview Drive, 0.2 miles to Kawasaki

Hotels

The following list is provided for the selection of accommodations that are in the proximity of Kawasaki Robotics. Kawasaki does not verify the quality or availability of the following hotels and provides this list for your information only. The driving distances listed are from the Kawasaki office. Discounted rates may be available; inquire about Kawasaki rate when making reservations.

Hotel Name	Address	Phone	Driving Distance (Miles)
Sonesta Select	42700 W 11 Mile, Novi, MI 48377	(248) 380-1234	6
Holiday Inn Express	48953 Alpha Tech Drive, Wixom, MI 48393	(248) 735-2781	2.5
Staybridge Suites	27000 Providence Pkwy, Novi, MI 48374	(248) 349-4600	3.1
Residence Inn Marriott	27477 Cabaret Drive, Novi, MI 48377	(248) 735-7400	5.0
The Baronette Renaissance	27790 Novi Rd, Novi, MI 48377	(248) 348-5000	4.5
Crowne Plaza Novi	27000 Karevich Drive, Novi, MI 48377	(248) 348-5000	5.7
DoubleTree Novi	42100 Crescent Blvd, Novi, MI 48375	(248) 344-8800	4.5
Hyatt Place	46080 Grand River Ave, Novi, MI 48374	(248) 513-4111	3.7

Facilities

The Kawasaki Robotics North American Training Center is located inside of Kawasaki Robotics (USA), Inc, North American headquarters in Wixom, Michigan. The training center consists of approximately 7500 sq. ft. of floor space containing 4 classrooms, 20 robots, student break area and restrooms.

Training Facility Guidelines

Kawasaki looks forward to welcoming you to our facility in Wixom, Michigan. To make your arrival a little easier, we have prepared the following guide containing some useful information about our facility. Please see the attached graphic for directions to student parking area and follow the signs to the Training Center.

On the first day of your class, you will be greeted by one of our instructors and given a security pass, directions to your class and the location of our amenities. The entrance door is open between 7:30 a.m. and 9:00 a.m. on your first day of training, entrance after that can be made using the security pass provided by your instructor.

Parking
Parking is available on the west side (front) of the building. Enter the building through the student entrance on the south side of the building. Classrooms are located off the training lab.

Class Hours
All training classes begin at 8:00 a.m. and end at 4:30 p.m., with a 15-minute break in the morning and a second in the afternoon. Lunch is typically from 11:45 a.m. - 12:45 p.m.

Student Building Access
Student activities are restricted to the laboratory, classrooms, student kitchen and restrooms. If for any reason the student needs access to other parts of the building, please see the instructor. If the student needs to set up a meeting with a member of the Kawasaki Robotics staff, please have the instructor set up the meeting so it does not conflict with the classroom or lab instruction. Safety glasses are required when entering shop areas (this includes walking inside the yellow painted lines).

Smoking Policy

Kawasaki Robotics maintains a smoke free environment. Smoking is permitted outside of the building only.

Recommended Attire

Casual attire, such as sweaters, sweatshirts, T-shirts, jeans, slacks, sport shirts, flannel shirts, sport coats, closed toed leather shoes, are appropriate for all programming, and electrical maintenance classes. Shorts, skirts, tennis shoes, open toed shoes, tank tops, and inappropriate logos are unacceptable and not permitted in the training center. For students attending preventive maintenance classes, coveralls or lab coats may be used to protect clothing from grease and lubricants used during the hands-on portions of the class.

Student Conduct

It is the intention of Kawasaki to provide a healthful, safe, and efficient workplace in its facilities. While on Kawasaki premises, no student may use, possess, dispense, distribute, sell or be under the influence of alcohol, illegal or drugs not prescribed. The legal use of prescribed drugs or over-the-counter medication is permitted on the job only if it does not impair student's ability to perform the job effectively and safely.

If at any time the management staff or instructors notice a change in speech, attitude, coordination, or can smell alcohol on the student, Kawasaki reserves the right to have the student leave the premises and may not be able to finish the course. The student's employer will be notified regarding the student's actions.

Student Refreshments

Coffee, tea, and hot chocolate are provided at no charge. Vending machines are available for soft drinks and snacks. Students are responsible for their own lunch arrangements. A list of area restaurants is available in class.

Food and Drinks in the Laboratory

Food and drinks may be consumed in the laboratory. However, NO LIQUID OR DEBRIS is allowed on or around the robots and/or controllers. If this policy is not strictly adhered to, the Instructor may restrict the consumption of food and drink to outside the laboratory setting.

Equipment Operation

All laboratory activities and equipment operation must be performed in the presence of a Kawasaki Robotics Instructor.

We remind all our students that the Training laboratory is a simulated work environment and as such, all usual cautions should be observed. Please ensure that you keep to the aisles in the lab and DO NOT WALK BETWEEN ROBOTS. Please understand that equipment used for training in electrical service courses may have faults intentionally introduced into the operating system that could cause unexpected, high-speed movement.

These are likely to be uncharacteristic to the normal operation of the robot and can surprise even the most experienced robot user. Please consider any robot not under the supervision or control of your own instructor as "off limits".

Phones and Messages

If you need to place a phone call, see your instructor. The phones in the laboratory are for internal calls only. Local outside calls may be made from the student lunch area during break times. Cell phones are permitted but students are asked to ensure cell phone use does not disrupt the normal class.

Feedback

At the end of your class, you will be asked to complete a questionnaire asking your opinions about the content of your training and the way you were received at Kawasaki. We are committed to continually improving our facilities and training capabilities and ask you to take the few moments to objectively help us in that process. All comments and criticisms are gratefully received. Should you have any concerns during your visit, then please do not hesitate to ask your instructor, or if preferred, ask to see the Training Department Supervisor.

Finally, we ask all students to respect the privacy of Kawasaki and all our customers by restricting their movements to within the training laboratory and break room. Should you wish to meet another Kawasaki employee or visit a separate part of our building, please ask your instructor for further information.

Emergency Phone Numbers

In the event of an emergency that demands your immediate response, inform your instructor or any other Kawasaki employee in the Training center.

Local Fire, Police, Ambulance: 8-911
Sheriff - Oakland County: 8-911
State Police - Northville: 8-1-248-348-1505

Course Guide
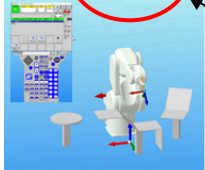
The following pages contain "Course Description Flyers" for the various training classes available from Kawasaki Robotics. The format throughout is very similar to allow you to quickly find the course goals, objectives, prerequisites, and a profile of the expected student. The course code is in the course title of every page and can be used to cross-reference to our Training Schedule. This number can also be used when scheduling classes. Please contact the Kawasaki Robotics training department for availability and scheduling.

P: 248.446.4248
E: training@kri-us.com

Course Codes

COURSE CODE	COURSE DESCRIPTION
Basic Operations	
K10	E/F Operations
K20	T Operations
Basic Programming	
K110	E Ops and Programming
KV110	Virtual E Ops and Programming
K120	E EP Ops and Programming
K130	E Arc Ops and Programming
K140	T Ops and Programming
Advanced Programming	
K210	AS Language Programming
KV210	Virtual AS Language Programming
K220	Cross-Over Integrator
KV220	Virtual Integrator Cross Over
K230	Advanced System Integration

COURSE CODE	COURSE DESCRIPTION
Electrical Maintenance	
K310	E3x Maintenance and Troubleshooting
K320	E (EP) Maintenance and Troubleshooting
K330	E0x Maintenance and Troubleshooting
K340	T Maintenance and Troubleshooting
K345	F5x Maintenance and Troubleshooting
K350	T EP Maintenance and Troubleshooting
K360	T0x Maintenance and Troubleshooting
Mechanical Maintenance	
K410	B Series Maintenance
K415	BXP Series Maintenance
K420	BU Series Maintenance
K430	R Series Maintenance
K440	Z Series Maintenance
K450	KJ Series Maintenance
K460	BA Series Maintenance
K470	CP Series Maintenance
Application	
K511	KRoset Primer
K512	KRoset Power User
K513	KRoset Advanced
K520	E Series Cubic S
K530	T Series Cubic S
K550	Core Cubic S

Basic Operations
E Controller Operations (K10)

The course goal is to familiarize students with the procedures to operate the robot using the teach pendant.

Course Duration 2 days

Topics Include

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Program Selection and Execution

❖ Selecting proper menus from the teach pendant for program execution

❖ Positioning the robot by using the Teach Pendant

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖ Understand Teach Pendant buttons
❖ Understand Teach Pendant Screen Navigation
❖ Move robot in Joint, Base, and Tool
❖ Run robot system in both manual and automatic modes
❖ Understand programming structure and language
❖ E Stop recovery
❖ Fault Recovery

Student Profile

❖ Operators

❖ Engineers

❖ Service personnel

❖ Machine operators

❖ Supervisory personnel

Prerequisites

❖ None

T Controller Operations (K20)

The course goal is to familiarize students with the procedures to operate the robot using the teach pendant.

Course Duration 2 days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Program Selection and Execution

- ❖ Selecting proper menus from the teach pendant for program execution

- ❖ Positioning the robot by using the Teach Pendant

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Understand Teach Pendant buttons
- ❖ Understand Teach Pendant Screen Navigation
- ❖ Move robot in Joint, Base, and Tool
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand programming structure and language
- ❖ E Stop recovery
- ❖ Fault Recovery

Student Profile

- ❖ Operators

- ❖ Engineers

- ❖ Service personnel

- ❖ Machine operators

- ❖ Supervisory personnel

Prerequisites

- ❖ None

Basic Programming

E Operations and Programming (K110)

The course goal is to teach students how to operate and program the robot using the teach pendant.

Course Duration 3.5 days

Topics Include

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Selecting proper menus for programming and program execution

❖ Positioning the robot by use of pendant control

❖ Program creation procedures

❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖
❖ Run robot system in both manual and automatic modes
❖ Understand programming structure and language
❖ Create a Block Step Program
❖ Modify programs including:
  ⇨ Insert position
  ⇨ Modify positions
  ⇨ Hot edit current positions
  ⇨ Transfer program steps
  ⇨ Perform an All Data Save
  ⇨ Clear minor operation faults

Student Profile

❖ Engineers

❖ Operators

❖ Technicians

❖ Programmers

Prerequisites

❖ None

Virtual E Operations and Programming (KV110)

The course goal is to teach students how to operate and program the robot using the teach pendant.

Course Duration 3.5 days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Selecting proper menus for programming and program execution

- ❖ Positioning the robot by use of pendant control

- ❖ Program creation procedures

- ❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand programming structure and language
- ❖ Create a Block Step Program
- ❖ Modify programs including:
  - ⇨ Insert position
  - ⇨ Modify positions
  - ⇨ Hot edit current positions
  - ⇨ Transfer program steps
  - ⇨ Perform an All Data Save
  - ⇨ Clear minor operation faults

Student Profile

- ❖ Engineers
- ❖ Operators
- ❖ Technicians
- ❖ Programmers

Prerequisites

- ❖ None

E (EP) Operations and Programming (K120)

The course goal is to teach students how to operate and program the Explosion Proof (EP) robot using the teach pendant.

Course Duration: 3.5 days

Topics Include:

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Selecting proper menus for programming and program execution

❖ Positioning the robot by use of pendant control

❖ Program creation procedures

❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖ Run robot system in both manual and automatic modes
❖ Understand programming structure and language
❖ Create a Block Step Program
❖ Modify programs including:
  ⇨ Insert position
  ⇨ Modify positions
  ⇨ Hot edit current positions
  ⇨ Transfer program steps
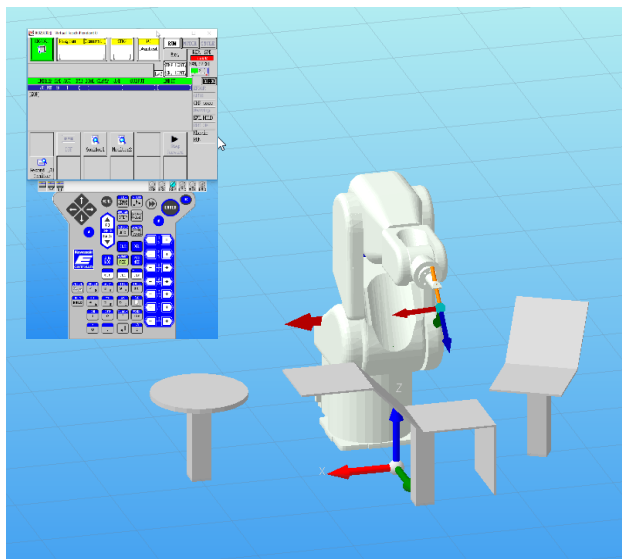 ⇨ Perform an All Data Save
  ⇨ Clear minor operation faults

Student Profile

❖ Engineers

❖ Operators

❖ Technicians

❖ Programmers

Prerequisites

❖ None

E Arc Operations and Programming (K130)

The course is designed to offer basic robot and arc welding operations, programming, and safety training.

Course Duration 3.5 days

Topics Include

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Selecting proper menus for programming and program execution

❖ Positioning the robot by use of pendant control

❖ Program creation procedures

❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖ Run robot system in both manual and automatic modes
❖ Understand programming structure and language
❖ Create a Block Step Program using weld conditions
❖ Teach path using weld and non-weld steps
❖ Modify programs including:
  ⇨ Insert position
  ⇨ Modify positions
  ⇨ Hot edit current positions
  ⇨ Transfer program steps
  ⇨ Perform an All Data Save
  ⇨ Clear minor operation faults

Student Profile

❖ Engineers

❖ Operators

❖ Technicians

❖ Programmers

Prerequisites

❖ Basic Welding knowledge

T Operations and Programming (K140)

The course goal is to teach students how to operate and program the robot using the "T" Controller and Teach Pendant.

Course Duration 3.5 days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Selecting proper menus for programming and program execution

- ❖ Positioning the robot by use of pendant control

- ❖ Program creation procedures

- ❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand programming structure and language
- ❖ Create a Block Step Program
- ❖ Modify programs including:
  - ⇨ Insert position
  - ⇨ Modify positions
  - ⇨ Hot edit current positions
  - ⇨ Transfer program steps
  - ⇨ Perform an All Data Save
  - ⇨ Clear minor operation faults

Student Profile

- ❖ Engineers

- ❖ Operators

- ❖ Technicians

- ❖ Programmers

Prerequisites

- ❖ None

Advanced Programming

AS Language Programming
(K210)

The course goal is to teach students to perform all necessary functions to create, edit and execute an advanced high-level program using the AS Language

Course Duration 3.5 days

Topics Include

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Editor Commands

❖ Transformations

❖ Program creation procedures

❖ Robot Control Program Instructions and Monitor Commands

❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖ Run robot system in both manual and automatic modes
❖ Understand programming structure and language
❖ Identify Variable and Logical Expressions
❖ Create a Mainline Program
❖ Identify and Use Program Control and Data Storage Commands
❖ Use Motion Control
❖ Output Signal Control
❖ Use Frame Command

Student Profile

❖ Engineers

❖ Programmers

❖ Technicians

Prerequisites

❖ Any of Kawasaki C, D, E, or F Operations and Programming Courses

Virtual AS Language Programming (KV210)

The course goal is to teach students to perform all necessary functions to create, edit and execute an advanced high-level program using the AS Language

Course Duration 3.5 days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Editor Commands

- ❖ Transformations

- ❖ Program creation procedures

- ❖ Robot Control Program Instructions and Monitor Commands

- ❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand programming structure and language
- ❖ Identify Variable and Logical Expressions
- ❖ Create a Mainline Program
- ❖ Identify and Use Program Control and Data Storage Commands
- ❖ Use Motion Control
- ❖ Output Signal Control
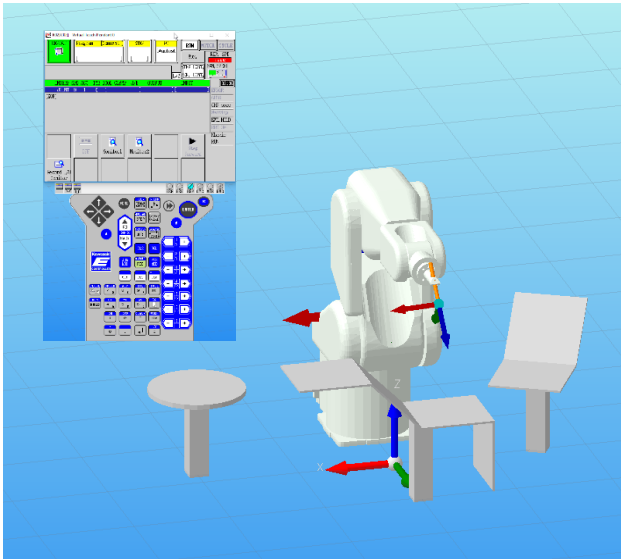- ❖ Use Frame Command

Student Profile

- ❖ Engineers

- ❖ Programmers

- ❖ Technicians

Prerequisites

- ❖ Any of Kawasaki C, D, E, or F Operations and Programming Courses

Cross-Over Integrator (K220)

The course is designed for System Integrators who are currently proficient with robot system integration.

Course Duration 5 days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Controller Component Overview

- ❖ Block Step Programming

- ❖ AS Language Programming

- ❖ Interface Panel Programming

- ❖ PC Programs

- ❖ I/O Interface

- ❖ KLogic

- ❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand Block Step programming structure and language
- ❖ Understand AS programming structure and language
- ❖ Identify Variable and Logical Expressions
- ❖ Create a Mainline Program
- ❖ Identify and Use Program Control and Data Storage Commands
- ❖ Understand and Setup I/O Interface
- ❖ Understand and Use KLogic

Student Profile

- ❖ Engineers

- ❖ Programmers

- ❖ Technicians

Prerequisites

- ❖ Individuals must have working knowledge and experience in robot operation, programming and installation.

Virtual Integrator Cross Over
(KV220)

The course is designed for System Integrators who are currently proficient with robot system integration.

Course Duration *5* days

Topics Include

- ❖ Operating controls and indicators on the robot controller

- ❖ Safety precautions used while programming and program execution

- ❖ Controller Component Overview

- ❖ Block Step and AS Language Programming

- ❖ Interface Panel Programming

- ❖ PC Programs

- ❖ I/O Interface

- ❖ KLogic

- ❖ Program modification techniques

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand basic robot safety principles
- ❖ Run robot system in both manual and automatic modes
- ❖ Understand Block Step programming structure and language
- ❖ Understand AS programming structure and language
- ❖ Identify Variable and Logical Expressions
- ❖ Create a Mainline Program
- ❖ Identify and Use Program Control and Data Storage Commands
- ❖ Understand and Setup I/O Interface
- ❖ Understand and Use KLogic

Student Profile

- ❖ Engineers

- ❖ Programmers

- ❖ Technicians

Prerequisites

- ❖ Individuals must have working knowledge and experience in robot operation, programming and installation.

Advanced System Integration
(K230)

The course is designed to introduce students to the Controls aspects of integrating Kawasaki Robots

Course Duration 3.5 days

Topics Include

❖ Operating controls and indicators on the robot controller

❖ Safety precautions used while programming and program execution

❖ Controller Component review

❖ I/O Communication

❖ K-Logic / K-Ladder Programming

❖ Interface Panel Programming

❖ Signal Dedication for PLC Control

❖ Cubic S

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Understand basic robot safety principles
❖ Understand Optional I/O Boards
❖ Understand Block Step programming structure and language
❖ Understand AS programming structure and language
❖ Identify Variable and Logical Expressions
❖ Create a Mainline Program
❖ Identify and Use Program Control and Data Storage Commands
❖ Understand and Setup I/O Interface
❖ Understand and Use KLogic

Student Profile

❖ Engineers

❖ Programmers

❖ Technicians

Prerequisites

❖ Students attending this class should possess previous knowledge and skills in Robot Operation and programming, electrical controls, and some application specific knowledge

Electrical Maintenance

E3x Series Electrical Maint & Troubleshooting (K310)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations & Programming is recommended

E (EP) Series Electrical Maint & Troubleshooting (K320)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations& Programming is recommended

E0x Series Electrical Maint & Troubleshooting (K330)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations& Programming is recommended

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T Series Electrical Maint & Troubleshooting (K340)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations & Programming is recommended

T (EP) Series Electrical Maint & Troubleshooting (K350)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations& Programming is recommended

T0x Series Electrical Maint & Troubleshooting (K360)

The goals of this class is to teach students how to identify the electrical components, theory of operation, and proper troubleshooting procedures. Approximately 50% of the course is hands-on troubleshooting of actual robot systems.

Course Duration 3.5 days

Topics Include

- ❖ Operation of robot control and mechanical unit

- ❖ Safety precautions used while troubleshooting electrical system

- ❖ Description of components in the robot controller

- ❖ Principles of logical troubleshooting from power up, through emergency stop and servo system

- ❖ Tracing Circuit Diagrams

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Understand Electrical Maintenance Safety
- ❖ Understand the components in the Controller
- ❖ Navigate the Troubleshooting manual
- ❖ Read Kawasaki circuit diagrams
- ❖ Analyze and interpret system fault codes
- ❖ Diagnose and repair basic electrical faults
- ❖ Analyze servo-system data and make basic adjustments
- ❖ Repair and replace system components

Student Profile

- ❖ Industrial electricians
- ❖ Electrical service technicians
- ❖ Engineers
- ❖ Supervisory personnel

Prerequisites

- ❖ Familiarity with use of electronic test equipment (voltmeter and oscilloscope)
- ❖ Basic understanding of digital electronics is helpful
- ❖ Operations& Programming is recommended

Mechanical Maintenance

B Series Maintenance (K410)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the B Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

BU Series Maintenance (K420)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the BU Series Robot.

Course Duration 1.5 days

Topics Include

❖ Proper safety precautions used while performing mechanical repair

❖ Operation of robot control and mechanical unit

❖ Description and operation of mechanical components

❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

❖ Perform safety precautions used while doing mechanical repair

❖ Properly start-up, operate, and shutdown the robot

❖ Describe the operation of mechanical components

❖ Use the manual for repair and ordering of spare parts

❖ Perform preventive maintenance procedures on the robot

❖ Perform Simple Zeroing procedures

Student Profile

❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

❖ Kawasaki Operations and Programming
❖ Mechanical background or experience is helpful

R Series Maintenance (K430)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the R Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

Z Series Maintenance (K440)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the Z Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

KJ Series Maintenance (K450)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the KJ Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

BA Series Maintenance (K460)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the BA Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

CP Series Maintenance (K470)

This course is designed for individuals responsible for Mechanical Repair, Adjustment, and Preventive Maintenance of the BA Series Robot.

Course Duration 1.5 days

Topics Include

- ❖ Proper safety precautions used while performing mechanical repair

- ❖ Operation of robot control and mechanical unit

- ❖ Description and operation of mechanical components

- ❖ How to use manual for repair and ordering of spare parts

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Perform safety precautions used while doing mechanical repair

- ❖ Properly start-up, operate, and shutdown the robot

- ❖ Describe the operation of mechanical components

- ❖ Use the manual for repair and ordering of spare parts

- ❖ Perform preventive maintenance procedures on the robot

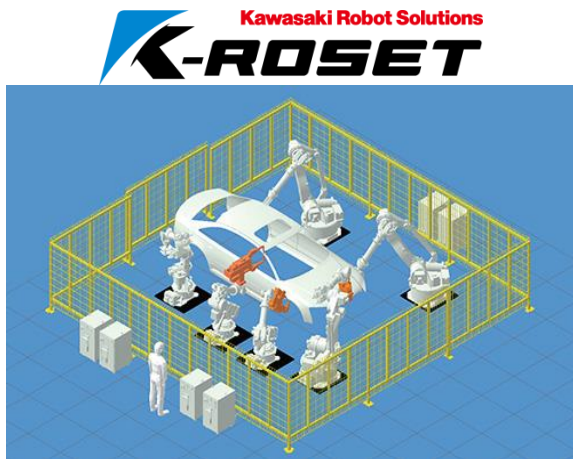- ❖ Perform Simple Zeroing procedures

Student Profile

- ❖ Industrial personnel required to mechanically repair the robots and to perform regular preventive maintenance

Prerequisites

- ❖ Kawasaki Operations and Programming
- ❖ Mechanical background or experience is helpful

Application & Options

KRoset Primer (K511)

The goal of this course is to familiarize students with the basics of K-Roset environment and use.

Course Duration ½ day

Topics Include

- ❖ Installing K-Roset

- ❖ K-Roset Setup

- ❖ K-Roset Parameters

- ❖ Virtual Teach Pendant

- ❖ Virtual Menus and Environment

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Install and setup K-Roset
- ❖ Open Sample project for familiarization of Menus and Environment
- ❖ Understand Menu structure
- ❖ Understand Virtual Teach Pendant Options
- ❖ Demonstrate K-Roset Task Panels Uses
- ❖ Understand Pull Down Menus, icons, and tabs.
- ❖ Adjust environment using mouse controls
- ❖ Understand Teach Pendant buttons, menus, and sections.

Student Profile

- ❖ This training is targeted to the people that will be applying and integrating K-Roset for offline programming.
- ❖ This course is intended for those who are responsible for simulating robot layout and reach capabilities and robot program simulation
- ❖ This course is intended for engineering personnel that are interested in computer simulation software
- ❖ This course is designed for students attending Kawasaki Virtual Training

Prerequisites

- ❖ Advanced PC user

KRoset Power User (K512)
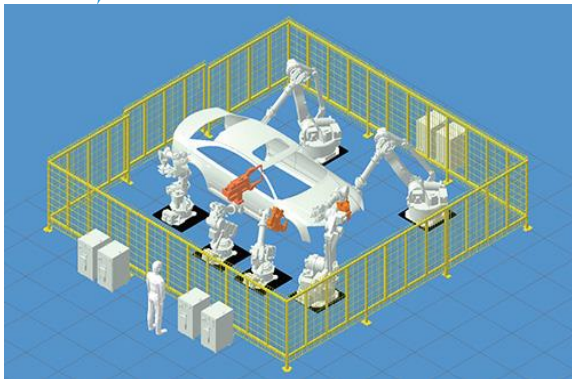
The goal of this course is to teach students the basics of Cell design, simulation, and programming of Kawasaki Robot.

Course Duration 2 days

Topics Include

- ❖ Moving Robot in Virtual Environment

- ❖ Creating Projects Programs

- ❖ Monitoring Robot

- ❖ Loading and Attaching Tools

- ❖ Adding Workpieces and Obstacles

- ❖ Using Shape Generator

- ❖ Configure Project using Option Plug in and Editor Mode

- ❖ Create Teach points using different task panel options and KR Term

- ❖ Synchronization of Data

- ❖ Analyze Cycle Times

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Opening and Editing Projects
- ❖ Use Teach Pendant to jog robot, create, test, execute Block Step Programs
- ❖ Use Terminal tab to monitor/program the robot
- ❖ Create, Load, and Adjust a tool for installed robot
- ❖ Create Environment with robot, workpiece, and obstacles
- ❖ Use Option Plug-in and Editor Mode
- ❖ Create Teach Points using Task Panels
- ❖ Perform Synchronization between Controller and K-Roset Task Panels
- ❖ Perform Simulations
- ❖ Analyze Cycle times

Student Profile

- ❖ This training is targeted to the people that will be applying and integrating K-Roset for offline programming.
- ❖ This course is intended for those who are responsible for simulating robot layout and reach capabilities and robot program simulation
- ❖ This course is intended for engineering personnel that are interested in computer simulation software

Prerequisites

- ❖ Advanced PC user
- ❖ Previous experience Kawasaki Programming
- ❖ Successful completion of K511 K-Roset Primer course

KRoset Advanced (K513)
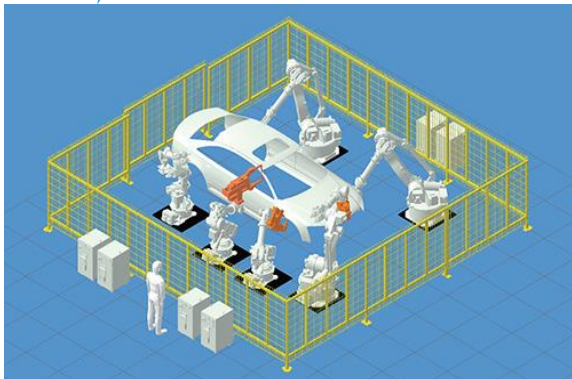
The goal of this course is to teach students the Advanced functions of K-Roset.

Course Duration 1.5 days

Topics Include

- ❖ Simulations
- ❖ Advanced Programming Plug Ins
- ❖ Handling Clamp Zones
- ❖ I/O Signal Connections
- ❖ Creating Video of Simulation
- ❖ Cycle Time Analysis
- ❖ Installable Position Analysis
- ❖ Synchronization to Live Robot
- ❖ Live robot debug using K-Roset

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Create Environment with robot and obstacles
- ❖ Create programs using multiple options
- ❖ Program Simulations
- ❖ Create Clamp zones and manipulate parts
- ❖ Setup I/O
- ❖ Record videos of simulations
- ❖ Evaluate Cycle time
- ❖ Perform Reach Study
- ❖ Evaluate Crash Conditions
- ❖ Use multiple methods of Synchronization
- ❖ Perform Live Robot to K-Roset Functions

Student Profile

- ❖ This training is targeted to the people that will be applying and integrating K-Roset for offline programming.
- ❖ This course is intended for those who are responsible for simulating robot layout and reach capabilities and robot program simulation
- ❖ This course is intended for engineering personnel that are interested in computer simulation software

Prerequisites

- ❖ Advanced PC user
- ❖ Previous experience Kawasaki Programming
- ❖ Successful completion of K511 K-Roset Primer course
- ❖ Successful completion of K512 K-Roset Power User course
- ❖

E Series Cubic S (K520)

The course goal is to teach students how to setup and monitor Cubic S safety module.

Course Duration 1.5 days

Topics Include

- ❖ Cubic S & Software Overview
- ❖ Safety I/O Functions
- ❖ User Interface Overview
- ❖ CS Configurator Installation
- ❖ Case Study
- ❖ Troubleshooting

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Describe the purpose of Cubic S and its functions
- ❖ Load, setup, and operate CS-Configurator
- ❖ Create Monitoring Areas
- ❖ Create Tool Points using CS Configurator, AS Language, and Teach Pendant
- ❖ Setup and observe Joint and Speed Monitoring
- ❖ Create Tool Orientation areas
- ❖ Add additional E-Stop monitoring

Student Profile

- ❖ This course is intended for personnel responsible for Setup, Installation, and/or programming of the Kawasaki Robot System.

Prerequisites

- ❖ Attendees should have attended the standard Operations and Programming Course.

T Series Cubic S (K530)

The course goal is to teach students how to setup and monitor Cubic S safety module.

Course Duration 1.5 days

Topics Include

- ❖ Cubic S & Software Overview
- ❖ Safety I/O Functions
- ❖ User Interface Overview
- ❖ CS Configurator Installation
- ❖ Case Study
- ❖ Troubleshooting

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Describe the purpose of Cubic S and its functions
- ❖ Load, setup, and operate CS-Configurator
- ❖ Create Monitoring Areas
- ❖ Create Tool Points using CS Configurator, AS Language, and Teach Pendant
- ❖ Setup and observe Joint and Speed Monitoring
- ❖ Create Tool Orientation areas
- ❖ Add additional E-Stop monitoring

Student Profile

- ❖ This course is intended for personnel responsible for Setup, Installation, and/or programming of the Kawasaki Robot System.

Prerequisites

- ❖ Attendees should have attended the standard Operations and Programming Course.

Core Cubic S (K550)

The course goal is to teach students how to setup and monitor Cubic S safety module.

Course Duration 1.5 days

Topics Include

- ❖ Cubic S & Software Overview

- ❖ Safety I/O Functions

- ❖ User Interface Overview

- ❖ CS Configurator Installation

- ❖ Case Study

- ❖ Troubleshooting

Course Objectives

After successfully completing the course, the participant should be able to:

- ❖ Describe the purpose of Cubic S and its functions

- ❖ Load, setup, and operate CS-Configurator

- ❖ Create Monitoring Areas

- ❖ Create Tool Points using CS Configurator, AS Language, and Teach Pendant

- ❖ Setup and observe Joint and Speed Monitoring

- ❖ Create Tool Orientation areas

- ❖ Add additional E-Stop monitoring

Student Profile

- ❖ This course is intended for personnel responsible for Setup, Installation, and/or programming of the Kawasaki Robot System.

Prerequisites

- ❖ Attendees should have attended the standard Operations and Programming Course.

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Training Catalog

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