

KUKA Robots, Level 1

Contents

1. Course structure
2. Introduction to robotics
 - Introduction
 - Applications for industrial robots
 - Examples of robotic applications
 - Exercises
3. Training module: Structure and function of a KUKA robot system
 - Robot basics
 - Robot arm of a KUKA robot
 - KR C4 robot controller
 - Exercises
4. Training module: Robot operation and cell safety
 - The KUKA smartPAD
 - Robot programming
 - Robot safety
 - Exercises
5. Training module: Working with the Navigator
 - Creating program modules
 - Editing program modules
 - Archiving and restoring robot programs
 - Selecting and starting robot programs
 - Performing an initialization run
 - Reading and interpreting robot controller messages
 - Selecting and setting the operating mode
 - Exercises
6. Operating the smartPAD and Navigator
 - Safety instruction
 - Exercise: smartPAD and Navigator
- 7 Moving the robot . 77
 - Moving individual robot axes
 - Coordinate systems in conjunction with robots
 - Moving the robot in the world coordinate system
 - Exercises
8. Moving the robot manually
 - Exercise: Moving the robot manually
9. Mastering the robot and calculating load data
 - Mastering principle
 - Loads on the robot
 - Tool load data
 - Exercises
10. Working with the tool and base coordinate systems
 - Moving the robot in the tool coordinate system

- Tool calibration
 - Moving the robot in the base coordinate system
 - Base calibration
 - Polling the current robot position
 - Jogging with a fixed tool
 - Exercises
11. Moving the robot in the tool coordinate system
- Exercise: Moving the robot in the tool coordinate system
12. Moving the robot in the base coordinate system
- Exercise: Moving the robot in the base coordinate system
13. Creating point-to-point motions
- Creating new motion commands
 - Creating cycle-time optimized motion (axis motion)
 - Modifying motion commands
 - Exercises
14. Creating a dummy program
- Exercise: Creating a dummy program
15. Creating CP motions
- Creating CP motions
 - Exercises
16. Creating CP motions
- Exercise: Creating CP motions
17. Creating logic functions
- Introduction to logic programming
 - Programming wait functions
 - Programming simple switching functions
 - Exercises
18. Programming triggers and gripper operation
- Programming the spline trigger
 - Gripper operation with KUKA.GripperTech
 - Programming a gripper by means of inline forms
 - Checking a gripper by means of an inline form
 - Exercises
19. Logic and switching functions
- Exercise: Logic and switching functions
20. Component handling exercise
- Exercise: Part handling
21. Working with spline blocks
- Working with SPLINE blocks
 - Programming spline blocks with inline forms
 - Velocity profile for spline motions
 - Modifications to spline blocks
 - Programming CP SPLINE blocks via inline forms
 - Programming PTP SPLINE blocks via inline form
 - Exercises
22. Programming spline blocks
- Exercise: Programming spline blocks
23. Training module: Expert programming outlook

- Working at Expert level
- Programming an endless loop
- Linking robot programs with a subprogram call
- Exercises

24. Expert programming

- Exercise: Expert programming

25. Working with WorkVisual

- Overview
- Managing a project with WorkVisual
- Connecting a WorkVisual PC to the controller
- Overview of the WorkVisual user interface
- Loading an existing project in WorkVisual
- Save WorkVisual project locally
- WorkVisual modes
- WorkVisual project structure ("Files" tab)
- Comparing projects with WorkVisual
- Transferring the project to the robot controller (installing)
- Assigning the project to the real robot controller
- Activating a project on the robot controller
- Editing KRL programs with WorkVisual
- File handling
- Activating the Templates catalog
- Working with the KRL Editor