

Robotics

UK R556v

IRC5

Advanced Programming stage 1 Virtual Class

Course Outline

Duration 5 days

Beneficial to Intergrators, Programmers, Advanced Operators
Instructor led online demonstrations with practical exercises.

The language of the course is English

Prerequisites

Students must have attended the UKR552 IRC5 Programming & Operation Course or have an extensive working knowledge of the topics covered

Experience using Microsoft Windows.

Each Student will require a computer with Internet connection.

Headset with microphone and webcam is preferable

RobotStudio installed preferably with premium or trial license.

Robotware 6 will also need to be installed.

[RobotStudio download link](#)

Subject areas

Safety

Complex Tool Centre Points

TCP Orientations and Stationary Tools

Work Object coordinate systems

Definition of Work Objects and Mirroring

Optional Arguments

Review Move Instructions and their options

Task structure and Module Declarations

Attributes, Load and Unload during execution Local & Global data

World coordinate system and World zones

Definition of World co-ordinates

Definition of temporary and stationary World Zones

Working with Numbers

Assigning a value to data using instructions and manual definition

Increment, Decrement and Clearing Values

Checking data or values using "IF" and "TEST"

Common Numeric Functions

Cycle Timing Instructions

Reset, Start, Stop and reading a clock used for timing

Configuration Instructions

Control robot axis configuration during Joint and Linear motion

Interpolation method through Singular Points

Positional Functions

Offset / Reltool and reading the current position

Searching

Linear and Circular search instructions

Routine Handling

Explanation and Uses

Instructions and data

Backwards Handling

Error and Undo Handling

Position Displacement

Activating and deactivating program displacement

Activating program displacement by specifying a value

Interrupts and Trap routines

Connecting a variable to a trap routine

Interrupt from a Digital /Analogue Input signals or Time

Activating and deactivating individual interrupts

Enabling all interrupts

Commonly used interrupt Instructions

Event Handling

Power on, Start, Restart, Stop, Qstop, Reset

Logical Instructions

For, While, Goto and Label

Advanced I/O Instructions

Changing Analogue Output values / Group of Digital Output signals

Waiting and testing for Inputs

Configuration of Group/Binary signals and Cross Connections

Trigg Instructions

Defining a fixed position I/O or interrupt event

Performance Instructions

Reducing acceleration and overriding or limiting program velocity

Defining and activating payload

Soft Servo and External Axes activation & deactivation

Creating Your Own Instructions and Functions

Routine declarations and parameters

Communication Instructions

TPWrite, TPErase, TPReadFK & TPReadNum

User Interaction Instructions & Functions

Objectives

On completion, participants will be able to:

Practise all areas of robot safety

Perform basic programming techniques

Create and properly use complex tool centre points

Define and use work object co-ordinate systems

Define and use world zones

Use numerical data instructions

Perform String Manipulation

Use instructions for avoiding singularity areas

Use search and error handling instructions

Use program displacement instructions

Use interrupt instructions and trap routines

Use event routines and backward handling

Use Error Handlers and Undo Handlers

Use communication instructions

Use advanced I/O instructions

Use instructions to enhance robot performance

Create basic 'user' instructions and functions