



ABB Czech Republic, Robotics

Course Catalogue

Robot programming and maintenance

Power and productivity
for a better world™



Basic information on our courses

Location

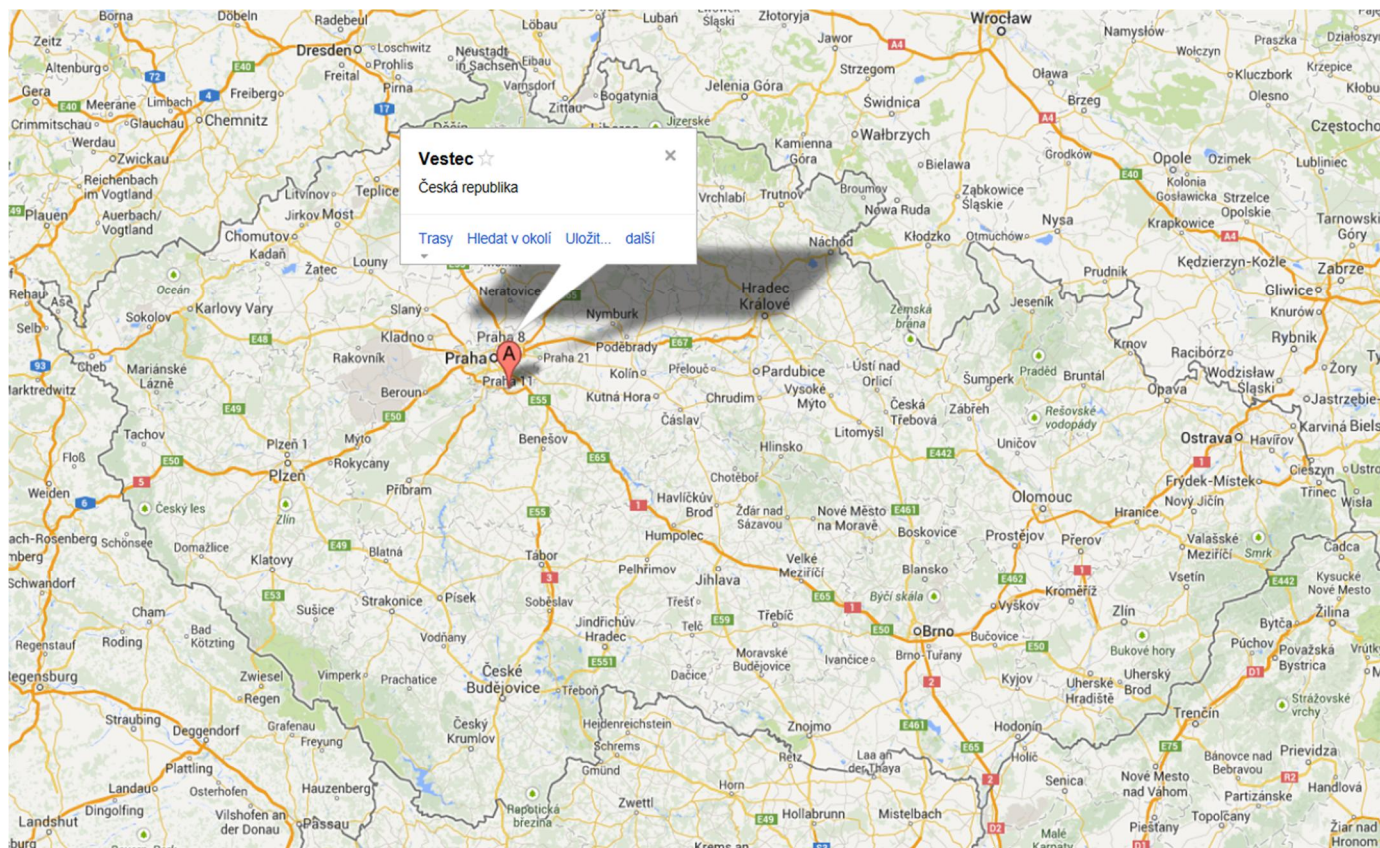
The courses take place in our training centre at the outskirts of Prague or, if desired, in our individual customer's place.

Training centre address:

ABB Training centrum
Nad Jezerem 567
Vestec u Prahy
252 42
Czech Republic

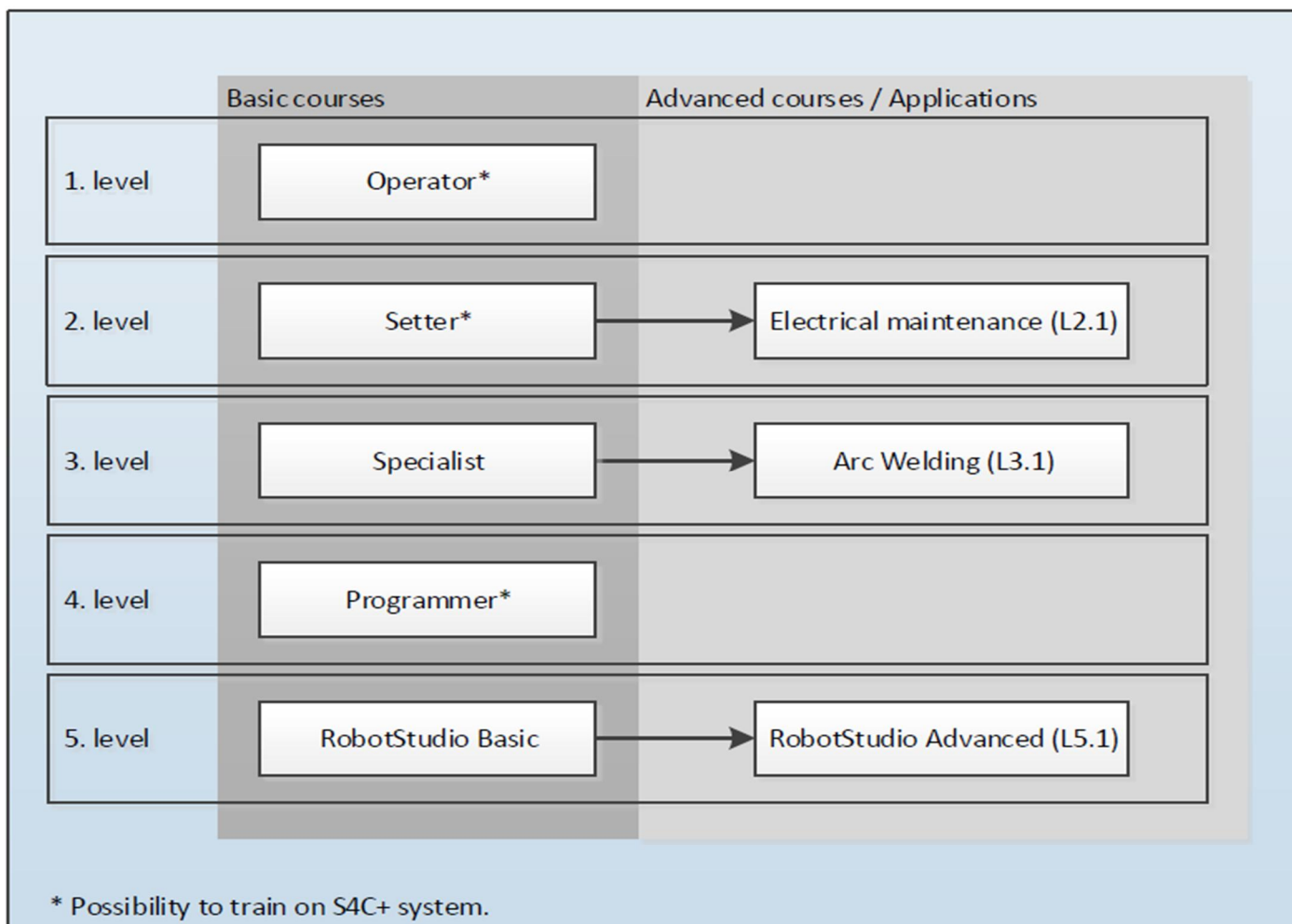
GPS :

49°59'20.921"N
14°29'26.906"E



List of courses offered

Course name	Course code	Course length
IRC5 Operator	L1	2 days
IRC5 Setter	L2	4 days
IRC5 Electrical maintenance	L2.1	3 days
IRC5 Specialist	L3	2 days
Application – Arc Welding	L3.1	3 days
IRC5 Programmer	L4	5 days
Robot Studio Basic	L5	5 days
Robot Studio Advanced	L5.1	5 days



IRC5 Operator

Information on the course

The "Operator" course is aimed towards understanding the basics of controlling and working with the IRC5 system. In this course, the main emphasis is put on safety at work and manual control of ABB robots.

Course type:

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Course length

2 days

Training event location

Vestec

Participant's profile

- Little to no experience with ABB robots.
- Works with ABB robots but is untrained at it.
- Operator, setter, maintenance person, ...

Number of participants

Maximum of 4 participants

Prerequisites for successful completion of this training

- The participant should be capable of controlling common industrial devices with adjustable parameters.

Study Materials

- Each participant receives the "Operation manual for IRS5 with a PlexPendant unit" at the beginning of the course.

Knowledge and skills acquired

- Behave and make decisions that comply with regulations applicable for the respective workplace.
- Operate the robot in manual mode.
- Create backups for the robot's program.
- Perform basic operations with the robot
 - Changing the working mode
 - Launching programs

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Manual adjustment of the robot – axial motion
Safety regulations	Basic overview and using the robot's coordinate system
Safety of a robotized workplace and ways to ensure it	Manual adjustment of the robot – linear motion mode
Description of the robotic system and examination of the operator's workplace	Practical exercises
Event log	
Day 2	
Morning	Afternoon
Creating a new tool	Launching programs and navigating through routines
Manual adjustment of the robot – changing the orientation of the "Reorientation" tool	Creating a backup for the robot's programs
Manual adjustment – navigating through the tool's coordinate system	Practical exercises
Practical exercises	Concluding discussion
	Certification exam

IRC5 Setter

Information on the course

The "Setter" course is aimed towards grasping the basic concept of programs and utilizing basic instructions. The absolvent of this course will be able to perform minor modifications in terms of altering the programmed positions or minor changes in the logic of the program effectively, functionally and, above all, safely.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I am a trained "Operator" and I wish to expand my knowledge.
- I have knowledge about PLC or other programmable machines and I need to start working with ABB robots.
- Beginner setter, programmer, maintenance person, ...

Prerequisites for successful completion of this training

- Completed "IRC5 Operator" training
- The participant should be capable of controlling common industrial devices with adjustable parameters.
- At least 1-month experience working at a robotized workplace of ABB.
- Basic English language knowledge is advantageous. But not required.

Study Materials

- Each participant receives the "Operation manual for IRS5 with a PlexPendant unit" at the beginning of the course.
- Each group receives following manuals
 - RAPID – Product manual
 - RAPID – Reference guide
 - Operation manual – IRC5 troubleshooting

Course length

4 days

Training event location

Vestec

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Behave and make decisions that comply with regulations applicable for the respective workplace.
- Create simple programs for ABB robotized workplaces.
- Perform basic modifications of programs.
 - Modify program logic
 - Trajectory adjustment
 - Changing Positions
- Signal usage
- Diagnose problems related to program trajectory and/or logic.
- Perform backup and system restore for a robot.
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Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Ensuring continuity with the Operator course
Safety regulations	Programming basics
Ensuring continuity with the Operator course	Basic data types and data storages
Practical exercises	Practical exercises
Day 2	
Morning	Afternoon
Program editor	Motion instructions – linear motion
Instructions for working with the operator window	Motion instructions – circular motion
Working with data storages	Motion instructions – axial motion
Instruction for adjusting the program logic	Practical exercises
Practical exercises	
Day 3	
Morning	Afternoon
Using the functions	Instructions on decisions (managing the data flow)
Trajectory parameterisation functions	Introduction to signals
Practical exercises	Practical exercises
Day 4	
Morning	Afternoon
Working with signals	Concluding practical example
Concluding practical example	Concluding discussion
	Certification exam

IRC5 Electrical maintenance

Information on the course

The "Electric systems maintenance" aims to expand the knowledge of electrical systems maintenance, composure of a robotized workplace of ABB and possibilities of its expansion. The goal of the course is to teach participants how to identify typical defects of the robot's system and how to rectify, repair or prevent them.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I am a trained "Setter" and I wish to expand my knowledge.
- Maintenance personnel or personnel who specialize on robotized workplace

Prerequisites for successful completion of this training

- Completed "IRC5 Setter" training
- Certified according to the regulation No. 50/1978 Coll.
- Previous experience in terms of industrial equipment maintenance
- At least 1-month experience working at a robotized workplace of ABB
- Basic English language knowledge is advantageous. But not required.

Study Materials

- Each participant receives the "Wiring diagrams" manual at the start of the course.

Course length

3 days

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Behave and make decisions that comply with regulations applicable for the respective workplace.
- Get a synopsis on robot power systems
- Know about safety circuits of a robot and their function
- Be proficient at using V/V signals
- Diagnose electricity-related robot malfunctions
- Diagnose electricity-related malfunctions of other robot peripherals (such as a grab, etc.)
- Perform backup and system restore for a robot.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Detailed description of electrical equipment of the manipulator
Safety regulations	Detailed description of electrical equipment of the controller
Advanced knowledge of electrical safety	Practical exercises
Overview of electrical elements of the manipulator	
Overview of electrical elements of the controller	
Practical exercises	

<i>Day 2</i>	
<i>Morning</i>	<i>Afternoon</i>
Communication bus	Diagnosing electrical circuitry defects
Circuit diagrams	Practical exercises
Practical exercises	
<i>Day 3</i>	
<i>Morning</i>	<i>Afternoon</i>
RobotStudio Online	Working with signals
- Creating a new system for a robot	
Calibration methods	Backup and restore
Counter updating	Practical exercises

IRC5 Specialist

Information on the course

The "Specialist" course is aimed towards expanding the knowledge acquired by the Setter course. An absolvent will learn more about working with the program. Additionally, they will learn things that are common for all specialized applications, such as usage of work objects.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I am a trained "Setter" and I wish to expand my knowledge.
- Robotic workplace setter, programmer, maintenance person, ...

Prerequisites for successful completion of this training

- Completed "IRC5 Setter" training
- Basic PC user skills
- The participant should be capable of controlling common industrial devices with adjustable parameters.
- At least 3-month experience working at ABB robotized workplace.
- Basic English language knowledge is advantageous. But not required.

Study Materials

- RAPID – Reference guide

Course length

2 days

Training event location

Vestec

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Behave and make decisions that comply with regulations applicable for the respective workplace.
- Work with complex data types.
- Learn to use work objects.
- Create and use your own functions with your own parameters.
- Use advanced instructions for program management.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Record-type variables and working with them
Safety regulations	Working with cycles
Work objects	Practical exercises
Practical exercises	
Day 2	
Morning	Afternoon
Using parameters in functions and procedures	RobotStudio Online – introduction
Practical exercises	RobotStudio Online – generating the system from the backup
	Practical exercises, Certification exam

Application – Arc Welding

Information on the course

The "Arc Welding" course is aimed towards expanding the knowledge on methods and possibilities of MIG/MAG welding at a robotized workplace of ABB. Two types of welding sources are available, Fronius and ESAB. On ESAB, higher level of welding source integration can be simulated. On Fronius, any other welder of lower integration level can be simulated.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I am a trained "Specialist" and I need to get into robotized welding.
- I work as a programmer of welding systems, welding technologist or on other position that uses an ABB robot for welding and I need to be capable of setting the weld parameters or trajectory.

Prerequisites for successful completion of this training

- Completed "Specialist" training
- At least 6 months of experience with adjusting ABB robotized workplaces.
- Knowledge of the welding process itself (e.g. from manual welding).
- Basic English language knowledge is advantageous. But not required.

Study Materials

- Arc welding manual

Course length

3 days

Training event location

Vestec

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Set and adjust a welding process on a robotized device on your own.
- Know your stuff in the area of robotized welding.
- Know welding machines and robotized welding accessories.
- Behave and make decisions that comply with regulations applicable for the respective workplace.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Robotized welding theory
Terminology overview	Welding Instructions
Safety regulations	Practical exercises
Day 2	
Morning	Afternoon
Revision of discussed matter	Defining the burner and accessories
Adjusting data types of welding instructions	Practical exercises

Day 3	
Morning	Afternoon
Revision of discussed matter	Concluding discussion
Communication between a robot and a welding source	Certification exam
Setup of a cleaning workplace	

IRC5 Programmer

Information on the course

The "Programmer" course is aimed towards achieving proficiency of the IRC5 software, orientation in RAPID documentation and structured programming in general.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I have completed the "Specialist" training and wish to expand my knowledge.
- I have knowledge about PLC or other programmable machines and need to create new programs for ABB robots.
- Programmer, integrator or other specialist that works with robotized workplaces of ABB

Prerequisites for successful completion of this training

- Completed "Specialist" training
- At least 6-month experience working at a robotized workplace of ABB.
- Basic English language knowledge is advantageous. But not required.

Study Materials

- Rapid manual

Course length

5 days

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Behave and make decisions that comply with regulations applicable for the respective workplace.
- Set and optimize system parameters.
- Create new programs for ABB robotized workplaces on your own.
- Optimize and modify existing programs.
- Diagnose program errors
- Create new system for a robot.
- Expand the robotized workplace in other ways.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	World zones
Safety regulations	Practical exercises
Initial input task	
Day 2	
Morning	Afternoon
Operating the exceptions (interruptions)	Combinations of interruptions and World zones
Practical exercises	Examples of usage
	Practical exercises

Day 3	
Morning	Afternoon
Search instructions	Error handling
Practical lessons	Practical exercises
Day 4	
Morning	Afternoon
Program displacement	RobotStudio Online
Practical exercises	Practical exercises
Day 5	
Morning	Afternoon
Complex task	Opportunity to discuss your own program
	Certification exam

RobotStudio Basic

Information on the course

The "RobotStudio Basic" course aims towards acquiring more in-depth programming knowledge, especially in the area of off-line programming using the RobotStudio software.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I have completed the "Programmer" training and wish to expand my knowledge.
- I have knowledge about PLC or other programmable machines and need to create new programs for ABB robots.
- Programmer, integrator or other specialist that works with robotized workplaces of ABB

Prerequisites for successful completion of this training

- Completed "IRC5 Programmer" training
- At least 12 months of experience with programming ABB robotized workplaces.
- PC user skills
- Basic orientation in 3D drawing ("3D vision", working with 3D objects, moving, tilting, views, faces – bodies, etc.).
- Knowledge of English language sufficient to understand a manual in English.

Study Materials

- Rapid manual
- RobotStudio manual - Basic

Course length

5 days

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Get to know the environment of RobotStudio.
- Learn to program a robot without needing to be physically present.
- Learn to import and export a system.
- Realize simulations using RobotStudio.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	Creation of custom controller
Terminology overview	Robot configuration
Safety regulations	Practical exercises
Getting familiar with the environment of RobotStudio	

<i>Day 2</i>	
<i>Morning</i>	<i>Afternoon</i>
Revision of discussed matter Robot motions	CAD Import Graphic programming
Creating and defining a tool	Practical exercises
Using and working with work objects	
<i>Day 3</i>	
<i>Morning</i>	<i>Afternoon</i>
Revision of discussed matter	Programming, modules, main procedure
Creating your own 3D objects	Practical exercises
<i>Day 4</i>	
<i>Morning</i>	<i>Afternoon</i>
Revision of discussed matter	Working with smart components
Modifying the program and creating a basic structure	Data transfer among the virtual and the real controller
Programming, simulating and adjusting programs	Practical exercises
<i>Day 5</i>	
<i>Morning</i>	<i>Afternoon</i>
Revision of discussed matter	Practical exercises
Controlling the robot range	Concluding discussion
Practical exercises	Certification exam

RobotStudio Advanced

Information on the course

The "RobotStudio Advanced" is a follow-up course to the basic RobotStudio course.

Course type

Coach-conducted course that combines theoretical tutorial with practical exercises. The emphasis is put on the involvement and discussion of all participants.

Participant's profile

- I have completed the "RobotStudio Basic" training and wish to expand my knowledge.
- I have knowledge about PLC or other programmable machines and need to create new programs for ABB robots.
- Programmer, integrator or other specialist that works with robotized workplaces of ABB

Prerequisites for successful completion of this training

- Completed "IRC5 Programmer" training
- At least 12 months of experience with programming ABB robotized workplaces.
- PC user skills
- Basic orientation in 3D drawing ("3D vision", working with 3D objects, moving, views, faces – bodies, etc.).
- Knowledge of English language sufficient to understand a manual in English.

Study Materials

- RobotStudio manual – Advanced

Course length

5 days

Number of participants

Maximum of 4 participants

Knowledge and skills acquired

- Get to know the environment of RobotStudio.
- Create motion programs for external axes.
- Create and modify SMART components.
- Create attractiveness enhancement tools.
- Create control screens for FlexPendant using ScreenMaker.

Course schedule

Day 1	
Morning	Afternoon
Introduction to the course	RobotStudio Online/RobInstall – creating robot systems
Terminology overview	Creating backup using RS
Safety regulations	Smart Components
Revision of discussed matter	Practical exercises
Day 2	
Morning	Afternoon
Revision of discussed matter	Simulating the palleting workplace using Smart Components
Creating a Smart Component	External axes
Practical lessons	Practical exercises

Day 3	
Morning	Afternoon
Revision of discussed matter	Creating a system with Conveyor Tracking
Creating a system with Conveyor Tracking	Practical exercises
Conveyor configuration	
Day 4	
Morning	Afternoon
Attractiveness enhancement tools	ScreenMaker
ScreenMaker	Verifying and configuring a ScreenMaker project
Practical exercises	Creating user screens
Day 5	
Morning	Afternoon
Revision of discussed matter	Variable topic according to the customer's demands
	Certification exam

Please contact us for more information:

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