2019 / 2020 Robotics Training Schedule

ABB

IRC5 Programming I
Price - $2200.00 + tax, per student
Class starts at 8:30 on Monday ends at noon on Friday

Start Date		End Date	Location	Language	Available
9-Dec-19	to	13-Dec-19	Brampton	English	5
16-Dec-19	to	20-Dec-19	Calgary	English	8
6-Jan-20	to	10-Jan-20	Brampton	English	12
13-Jan-20	to	17-Jan-20	Montreal	French	8
27-Jan-20	to	31-Jan-20	Brampton	English	12
10-Feb-20	to	14-Feb-20	Brampton	English	12
10-Feb-20	to	14-Feb-20	Red River	English	8
18-Feb-20	to	21-Feb-20	Calgary	English	8
24-Feb-20	to	28-Feb-20	Brampton	English	12
16-Mar-20	to	20-Mar-20	Brampton	English	12
13-Apr-20	to	17-Apr-20	Brampton	English	12
27-Apr-20	to	1-May-20	Calgary	English	8
4-May-20	to	8-May-20	Brampton	English	12
11-May-20	to	15-May-20	Red River	English	8
25-May-20	to	29-May-20	Brampton	English	12
1-Jun-20	to	5-Jun-20	Montreal	French	8
8-Jun-20	to	12-Jun-20	Brampton	English	12
15-Jun-20	to	19-Jun-20	Calgary	English	8
22-Jun-20	to	26-Jun-20	Brampton	English	12
6-Jul-20	to	10-Jul-20	Brampton	English	12
6-Jul-20	to	10-Jul-20	Red River	English	8
20-Jul-20	to	24-Jul-20	Brampton	English	12
10-Aug-20	to	14-Aug-20	Brampton	English	12
17-Aug-20	to	21-Aug-20	Montreal	French	8
24-Aug-20	to	28-Aug-20	Brampton	English	12
14-Sep-20	to	18-Sep-20	Brampton	English	12
5-Oct-20	to	9-Oct-20	Red River	English	8

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2019 / 2020 Robotics Training Schedule

IRC5 Programming II

Price - $2200.00 + tax, per student

Class starts at 8:30 on Monday ends at noon on Friday

Prerequisite - Programming I or Welding

Start Date		End Date	Location	Language	Available
4-Nov-19	to	8-Nov-19	Brampton	English	6
23-Mar-20	to	27-Mar-20	Brampton	English	12
27-Jul-20	to	31-Jul-20	Brampton	English	12

IRC5 Electrical

Price - $2200.00 + tax, per student

Class starts at 8:30 on Monday ends at noon on Friday

Start Date		End Date	Location	Language	Available
18-Nov-19	to	22-Nov-19	Brampton	English	3
3-Feb-20	to	7-Feb-20	Brampton	English	6
11-May-20	to	15-May-20	Brampton	English	6
1-Jul-20	to	5-Jul-20	Brampton	English	6

IRC5 Programming I for Arc/MIG Welding

Price - $2200.00 + tax, per student

Class starts at 8:30 on Monday ends at 16:30 on Thursday

Start Date		End Date	Location	Language	Available
2-Mar-20	to	5-Mar-20	Brampton	English	6
31-Aug-20	to	3-Sep-20	Brampton	English	6

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2019 / 2020 Robotics Training Schedule

Robot Studio I

Price - $2200.00 + tax, per student

Class starts at 8:30 on Monday ends at noon on Friday

Prerequisite - Programming I or Welding

Start Date		End Date	Location	Language	Available
20-Jan-20	to	24-Jan-20	Brampton	English	6
9-Mar-20	to	13-Mar-20	Brampton	English	6
1-Jun-20	to	5-Jun-20	Brampton	English	6
17-Aug-20	to	21-Aug-20	Brampton	English	6

Robot Studio II

Price - $2200.00 + tax, per student

Class starts at 8:30 on Monday ends at noon on Friday

Prerequisite - Robot Studio I

Start Date		End Date	Location	Language	Available
20-Apr-20	to	24-Apr-20	Brampton	English	6
26-Oct-20	to	30-Oct-20	Brampton	English	6

SafeMove Pro

Price - $1890.00 + tax, per student

Start date and times vary

Prerequisite - Programming I or Welding

Start Date		End Date	Location	Language	Available
19-Feb-20	to	21-Feb-20	Brampton	English	4
9-Mar-20	to	11-Mar-20	Brampton	English	4
7-Apr-20	to	9-Apr-20	Brampton	English	4

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SERVICE CANADA

2019 / 2020 Robotics Training Schedule

SafeMove I
Price - $1890.00 + tax, per student
Start date and times vary
Prerequisite - Programming I or Welding

Start Date		End Date	Location	Language	Available
25-Nov-19	to	27-Nov-19	Brampton	English	3
17-Jun-20	to	19-Jun-20	Brampton	English	6
7-Oct-20	to	9-Oct-20	Brampton	English	6

On-site Training
$3000.00 Per day + expenses.

Robots cannot be in production during training
We can train a maximum of 3 students per robot controller

Robots available to rent for on-site training.

FOR TRAINING GRANT INFORMATION

http://www.tcu.gov.on.ca/eng/eopg/cojg/

https://www.yveslandryfoundation.com/

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Robotics Course Descriptions

ABB

Programming I

The course goal is to teach students how to operate and program the robot using the teach pendant and Robot Studio Online

Prerequisites: None

Topics Include:

Safety precautions used while programming

Operating controls and indicators on the robot controller

Positioning the robot by use of joystick control

Program modification techniques

Course Objectives

Practice safety as it pertains to the robot system

Run the robot system in manual mode and automatic mode

Interpret and respond to event messages

Load, create, save, delete, check and edit basic programs

Verify robot synchronization using a calibration routine

Create and define a tool center point, using the 4 point method

Use movement instructions in a basic program

Use input and output instructions in a basic program

Create routines, and use routine instructions

Use decision making instructions in a basic program

Use registers and math instructions in a basic program

Use Teach Pendant communication instructions

Use time instructions in a basic program

Use offsets for movement instructions

Use work objects for position reference

Understand and update revolution counters

Student Profile

For personnel responsible for starting and operating the robot, creating programs and editing programs

Programming II

This course is for students who have completed IRC5 Programming I and who need a greater depth of knowledge. This course will lead to instructions in advanced programming features and techniques.

Prerequisites: Programming I or Welding

Topics Include:

Building and configuring robot software

Online and offline program editing

Advanced declarations of modules, routines, & data

Programming with interrupts and traps

Searching and program displacements

Error handling, backward handling, and undo handling

Advanced motion instruction

Course Objectives

Create, configure, and download software

Create and use Modules, routine, and data

Create advanced tool center points

Program search instructions

Program error handling instructions

Program interrupt instructions and traps

Use joint configuration instructions

Use motion control instructions

Student Profile

This course is intended for students that have completed Programming I course but require greater knowledge of programming features.

Suitable for system programmers or technicians with existing / developed programming skills

Robotics Course Descriptions

ABB

IRC5 Arc/MIG Welding

The goal of this course is to train the students to safely use the Flex Pendant to create weld programs, set and change weld data and edit existing programs

Prerequisites: GMAW training or similar

Topics Include:

Safety precautions while programming the robot

Operator controls and indicators on the Flex Pendant

Correct positioning of the robot using the Flex Pendant

Defining good TCP for Arc Welding application

RobotWare Arc commands and functions

Flex Pendant menus and displays for entry of weld data.

Defining & editing seam data, weld data

Creating, modifying and executing ArcWeld programs

Weld error recovery & error handling

Programming a weave of components of weave data

Functions when program execution is stopped

Seam tracking

Course Objectives

Safely operate robot welding cell

Create routines using proper structure

Operate and use the "production manager" programs

Perform and save system parameters

Use the positioner to properly orient the part for welding

Recognize and recover from the basic system errors

Student Profile

Weld cell programmers and engineers

IRC5 Electrical Maintenance

To teach students how to identify the electrical components, theory of operation, and introduce proper troubleshooting procedures on the IRC5 robot controller. Approximately 50% of course is hands-on troubleshooting

Prerequisites: Familiarity of electronic test equipment

Topics Include:

Theory of operation of the IRC5 robot controller

Safety precautions used while troubleshooting

Description of components in the IRC5 robot controller

Principles of logical troubleshooting from power up

through emergency stop loop and servo system

Input / Output interfacing between the controller

and peripheral equipment

Course Objectives

Practice safety as it pertains to the robot system

Identify and use the Flex Pendant

Run the robot system in manual mode and automatic mode

Interpret and respond to event messages

Identify different parts of the robot modules and arm

Load system software

Troubleshoot Power ON circuits

Troubleshoot computer and drive system to a board level

Troubleshoot Motors ON / Run Chains circuits

Troubleshoot the Motors, brakes, and resolvers

Configure an input device and an output device to the robot

Student Profile

Industrial electricians

Electrical service technicians

Supervisory personnel

Robotics Course Descriptions

ABB

SafeMove I

Students learn how to configure a high safety level in the robot system using the advanced featrues of SafeMove.
The certification exam (both written and practical) is administered by a certified ABB SafeMove Instructor

Prerequisites: Programming I

Topics Include:

System architecture

Levels of supervision

Hardware & software installation

Proper configuration

Testing the safety interlocks

Verifying limit switch override & operation

Verifying sync switch operation

Course Objectives

Observe the placement of the hardware

Review the block diagram

Review the capabilities and limitations

Describe active supervision

Describe passive supervision

Describe wiring procedures for a relay

Describe wiring procedures for a safety I/O block

Describe wiring procedures for the panel unit inputs

Install safety controller PCB

Install SMB and command harnesses

Use SafeMove wizard

Create a safety group and user

Create a password for the safety user

Activate a configuration

Verify the operation of a safety output

Confirm the proper operation of the configuration

SafeMove Pro

Students learn how to configure a high safety level in the PLC.
The certification exam (both written and practical) is administered by a certified ABB SafeMove Instructor

Prerequisites: Programming I

Topics Include:

UAS Settings (Safety User)

System description

Software installation

Software configuration

Communication setup

Safety signal configuration

Safety functions Configuring

Creating, modifying, downloading & uploading configuration file

Safety configuration verification and validation

Review the capabilities and limitations

Course Objectives

Install safety module in the main computer

Install harness

Navigate and use Visual SafeMove tool in RobotStudio efficiently

Create a safety group and user

Create a password for the safety user

Add SafeMove Pro option into existing/new system

Setup through CIP Safety or ProfiSAFE protocol

Configure safe IO signals

Configure function mappings

Configure Stops (Auto, General and Emergency stops)

Configure with geometries and speed supervision points

Configure Safety Functions in Safe Ranges and Safe Zones

Synchronize using both software and hardware option

Robotics Course Descriptions

ABB

Robot Studio I

Students learn how to use the ABB Robot Studio 6 software for use with IRC5 Controllers. This class will cover everything the general user would need to know

Prerequisites: Programming I

Topics Include:

Basic controls

Building a station

robot moves

Robot programs

Local origin

Tools

Task Frames

Auto path features

Course Objectives

Start and utilize RobotStudio 6 Software

Create a simulation station

Create and attach tooling to robot simulation

Create robot motion & programs

Create basic geometry modeling

Import external graphic files

Use the I/O simulator

Create work objects

Set local origin Set task frames

Use Auto Path feature

Use Signal Analyzer

Record simulations

Edit RAPID code using RAPID editor

Watch data values while simulation executes

Set-up and use Event Manager

Create simulation of real robot

Robot Studio II

Students learn how to use more advanced features of ABB Robot Studio 6 software for use the IRC5 Controllers. This course is an extension of the Robot Studio I course

Prerequisites: Robot Studio I

Topics Include:

Smart Components

Multi Move

Conveyor Tracking

Screen Maker

Graphic Tools

Advanced Modeling

Mechanisms

Non-ABB external axis

System Builder

Code Snippets

Rapid Profiler

Course Objectives

Create simulations with interactive objects such as conveyors, in-feeders, grippers, and more

Create simulations and program multiple robot applications

Setup and program conveyor tracking

Use graphic tools to change lighting, textures, and the look of objects

Create complex 3 dimensional objects

Create objects that move in simulations other than robots

Create external axis that are not standard ABB axes

Use System Builder to create virtual robot systems

Advanced RAPID editing techniques