# Allen Bradley Motion Control Fundamentals

## Course Description:

This skill-building course provides trainees with an overview of motion control concepts, terminology, functionality, and applications. In addition, students will also learn how motion control applications function using the concepts and principles discussed in each lesson. This course allows students to establish the essential foundation needed to attend other courses in the Motion Control curriculum. Furthermore it provides trainees with fundamental concepts of ULTRA™ and KINETIX Series families of single-axis and multi-axis digital and positioning servo drives. It describes the instructions on how to setup and connect the Ultra 3000, Ultra 5000 and Kinetix 6000 Series drive to a controlling device and a motor. The hardware connections necessary to run the drives are detailed in this course and basic software instructions are provided for common setup procedures. This course also provides information related to applications, proper drive selecting and sizing, as well as, various installation considerations and troubleshooting practices.

## You will learn:

After completing this course, trainees will be able to identify motion control system components and functions, apply basic motion control concepts, and identify the components of a digital servo motion controller and the functionality of AC and DC servo motors and servo drives and Identify the functionality of feedback devices and software servo loop. Also they will able to select and configure Ultra 3000 and Ultra 5000 drive parameters and modes of operation using UltraWare software. Furthermore they will able to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic, including SERCOS motion control technology.

Address: 27 Orabi St, Office (706)
El-Azbakia, 11111-Cairo.
Tel: +20 2 25763462.
Fax: +20 2 25763463.

العنوان: ٢٧ ش عرابى، مكتب (٧٠٦)
الازبكية، ١١١١١- القاهرة.
تليفون: ٢٥٧٦٣٤٦٢ ٢ (٢٠)
فاكس : ٢٥٧٦٣٤٦٣ ٢ (٢٠)

## Target Audience:

This course is intended for engineers, programmers, or technicians directly involved in the installation, operation and programming of Allen Bradley Ultra and Kinetix families Motion control systems.

## Prerequisites:

To successfully complete this course, the following prerequisites are required:

- Ability to perform basic Microsoft® Windows® tasks.
- Good Knowledge of the AC Motors and Drives Fundamentals.
- Completion of the ControLogix Fundamental, Maintenance and Troubleshooting course or equivalent experience.
- Experience with entering and debugging ladder logic.
- You must have previous experience with and a basic understanding of electrical terminology, programming procedures, networking, required equipment and software, and safety precautions.

## Duration:

3 days, 7 hours per day.

## Course Outline:

- Defining Motion Control.
- Identifying Motion Control System Components and Functions.
- Applying Basic Motion Control Concepts.
- Identifying the Components of a Digital Servo Motion Controller.
- Identifying the Functionality of Servo Drives.
- Identifying the Functionality of AC and DC Servo Motors.
- Identifying the Functionality of Feedback Devices.
- Identifying the Functionality of the Software Servo Loop.
- Introduction to ultra series (Catalog Numbers 1398-xxx).
- Ultra3000 and Ultra5000 System Component Overview and Connector Data.
- Configuring the ultra 3000 and Ultra 5000 drive properties Using UltraWare.

- Understanding the Ultra3000 Drive branch: Velocity, Current, Indexing Control Panel Windows and Drive Report.
- Understanding the Analog, Preset, Indexing and Motor Windows.
- Understanding the Tuning Windows.
- Understanding the Digital Inputs/Outputs and Analog Outputs Windows.
- Integrated Practice - Ultra3000 in Indexing mode using digital IO.
- Connecting to a DeviceNet Network.
- Integrated Practice - Ultra3000 with DeviceNet Network.
- Introduction to Kinetix series (Catalog Numbers 2094-xxx).
- Kinetix 6000 System Component Overview and Connection system.
- Configure the Kinetix 6000 Drive Modules.
- Connecting Ultra3000 and Kinetix 6000 to Logix5000 System Using SERCOS Interface.
- Configuring the Logix SERCOS Interface Modules, Controller, Motion Groups and Axes Using RSLogix5000 Software.
- Building Controllogix Motion Project Using RSLogix5000 Software.
- Integrated Practice – Kinetix 6000 SERCOS Interface System.
- Integrated Practice – Ultra 3000 SERCOS Interface System.
- Overview on troubleshooting Ultra 3000 Drive system and Kinetix 6000 Drive system.