

### Course Description

Learn how to implement motor control solutions using Xilinx All Programmable devices. This course requires basic knowledge of motor control; this comprehensive course covers motor control concepts; identifies the challenges in typical motor control solutions such as brushless direct current (DC), stepper, and permanent magnet synchronous motor (PMSM) motor control solutions and then demonstrates motor control techniques in Xilinx FPGAs and SoCs with the help of IPs provided by QDESYS.

**Level** – Application Specific 1

**Course Duration** – 1 day

**Price** – \$800 or 8 Xilinx Training Credits

**Course Part Number** – ISM11000-ILT

**Who Should Attend?** – FPGA designers and logic designers who seek training in motor control applications

#### Prerequisites

- Basic knowledge of motor control
- Basics of DSP
- FPGA design basics (recommended)
- Basic knowledge of EDK and C programming (recommended)

#### Software Tools

- Xilinx ISE® Design Suite: Logic or System Edition 14.2

#### Hardware

- Architecture: 7 series FPGAs, Spartan®-6 FPGAs, Zynq®-7000 SoCs\*
- Demo board: Avnet Spartan-6 FPGA Motor Control Kit\*

\* This course focuses on 7-series, Spartan-6, and Zynq architectures.

\*\* Check with [Morgan Advanced Programmable Systems, Inc.](http://www.morgan-aps.com) for the specifics of the in-class lab board or other customizations.

After completing this comprehensive training, you will have the necessary skills to:

- Identify the challenges of designing industrial motor control applications
- Describe how superior performance can be achieved by using Xilinx products in motor control applications
- Reduce total cost of ownership and increase scalability and flexibility by utilizing Xilinx products in industrial motor control applications
- Describe the Xilinx Motor Control reference design
- Identify motor control IP and development tools

### Course Outline

- Overview of Motor Control Solutions
- Overview of Xilinx Products
- Lab 1:** Introduction to the Xilinx Tools
- Motor Control Techniques
- Xilinx Motor Control Solutions
- Demo 1:** Spartan-6 FPGA Motor Control Reference Design
- Lab 2:** Computing Power Lab
- Demo 2:** QDESYS Motor Control Reference Design

### Lab Descriptions

- Lab 1:** Introduction to the Xilinx Tools – Use the ISE Design Suite Project Navigator to synthesize and implement the design. Also explore the Project Navigator design analysis capabilities.

- Lab 2:** Computing Power – Learn how to integrate the Clarke and Park transform motor control IPs into a design to measure instantaneous active and reactive power of a three-phase electric drive.
- Demos:** Spartan-6 FPGA Motor Control Reference Design and QDESYS Motor Control Reference Design – Introduces scalable solutions to implement motor control solutions using torque and speed-based control with on-the-fly change of modulation schemes. Introduces Xilinx proprietary RPFM modulation scheme and showcases its benefits.

### Register Today

Morgan Advanced Programmable Systems, Inc. (MAPS, Inc.) delivers public and private courses in locations throughout the central US region; including Iowa, Illinois, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota and Wisconsin.

Visit [morgan-aps.com/training](http://morgan-aps.com/training), for full course schedule and training information.



You must have your tuition payment information available when you enroll. We accept credit cards (Visa, MasterCard, or American Express) as well as purchase orders and Xilinx training credits.

### Student Cancellation Policy

- Students cancellations received more than 7 days before the first day of class are entitled to a 100% refund. Refunds will be processed within 14 days.
- Student cancellations received less than 7 days before the first day of class are entitled to a 100% credit toward a future class.
- Student cancellations must be sent [here](#).

### MAPS Inc. Course Cancellation Policy

- We regret from time to time classes will need to be rescheduled or cancelled.
- In the event of cancellation, live on-line training may be offered as a substitute.
- MAPS may cancel a class up to 7 days before the scheduled start date of the class; all students will be entitled to a 100% refund.
- Under no circumstances is MAPS responsible or liable for travel, lodging or other incidental costs. Please be aware of this cancellation policy when making your arrangements.
- For additional information or to schedule a private class contact us [here](#).