

# 2024 COURSE DESCRIPTIONS & SCHEDULE



## **PLC Maintenance Class**

The purpose of the Omron PLC Maintenance Course is to introduce an individual to the basic concepts of Omron PLC Maintenance and Troubleshooting using a mixture of lectures and hands on labs. This course is designed for the individual with little Omron PLC programming experience. The topics that are covered in the Maintenance training course are as follows: A brief history of the Omron PLC family; wiring to the PLC; the Omron I/O addressing scheme; basic functions of an Omron PLC (SCAN); CX-Programmer programming software; on-line editing of programs; and data memories and basic trouble shooting techniques.

## **Basic PLC Training**

The purpose of the Basic PLC Training Course is to introduce an individual to the basic concepts of the Omron PLC using a mixture of lectures and hands on labs. This course is designed for those with little or no prior PLC experience. The topics covered are: the history of the Omron PLCs; wiring to the PLC; I/O addressing; basic functions of an Omron PLC (SCAN); the design, entering and debugging of a basic ladder logic program; CX-Programmer software; on-line editing; and basic trouble shooting techniques. The hardware used in the class will be the Omron CJ2M PLC.

## **Advanced PLC Training**

The purpose of the Advanced PLC Training Course is to introduce an individual to the more advanced concepts of a PLC using a mixture of lectures and hands on labs. The topics that are covered in the Advanced PLC training course are as follows: BCD, DEC, HEX and Binary conversions; PLC instructions including MOV, ++B, --B, CMP, >, <, SFT, DIFU, KEEP, SET, RSET, +B, -B, +BL, SCL; and indirect addressing. The hardware used in the class will be the Omron CJ2M PLC. You must have a good understanding of the CX-Programmer software.

## **PLC Function Block Class**

The purpose of the PLC Function Block is to introduce an individual to the basic concepts of a Function Block (FB) using a mixture of lectures, hands on labs, and simulation software. This course is designed for the individual with little or no prior FB programming experience. The topics that are covered in the FB training course are as follows: description of a function block; advantages of using a function block; different component names within a function block; ladder function blocks; structured text function blocks; and different programming formats. You must have a good understanding of the CX-Programmer software.

## **Sysmac Studio PLC Operations**

The purpose of the Sysmac Studio Operations course is to introduce an individual to the basic concepts of Sysmac Studio, troubleshooting, and programming using a mixture of lectures and hands on labs. This course is designed for the individual with little Omron MAC (PLC) programming experience. The topics that are covered in the Sysmac Studio Operation course are as follows: History of PLCs; hardware layout; configuration of the NX1P2 via Sysmac Studio; the Omron I/O tag based addressing scheme; functions; function blocks; variables; arrays; structures; unions; searching; inline structured text; Sysmac Studio programming software; entering and debugging of a basic ladder logic program; and basic trouble shooting techniques. The hardware used in the class will be the Omron NX1P2 MAC (PLC). The class will be structured towards software navigation & basic online functions.

## **Sysmac Studio Programming**

The purpose of the Sysmac Studio Programming course is to introduce an individual to the basic concepts of Sysmac Studio and programming using a mixture of lectures and hands on labs. This course is designed for the individual with little Omron MAC (PLC) programming experience. The class will be structured towards learning how to program.

## **Sysmac Studio HMI Operations**

The purpose of the Sysmac Studio HMI Operations course is to introduce an individual to the basic concepts of Sysmac Studio HMI programming using a mixture of lectures and hands on labs. This course is designed for the individual with little Omron HMI programming experience. The topics that are covered in the Sysmac Studio HMI Operations course are as follows: part numbers; hardware layout; system menu; software tools; hardware configuration; software functionality; pages; text; buttons; lamps; numeric entry; numeric display; alarms; recipes ; security, and languages. The hardware used in the class will be the Omron NA5 HMI being used with Sysmac Studio MAC (PLC) products. The class will be structured towards software navigation & common programming objects.

## **G9SP/NE1A Safety Controller**

Lakewood Automation and Omron STI cordially invite you to a safety workshop introducing the new G9SP Programmable Safety Controller. In this hands-on workshop you will learn how to wire, program and troubleshoot with the G9SP Safety Controller. You will also increase your knowledge of the benefits of using a Programmable Safety Controller including:

- \* Reduced inventory
- \* Easier troubleshooting
- \* Increased safety
- \* Increased productivity

| Description                  | Dates             |
|------------------------------|-------------------|
| Sysmac Studio PLC Operations | March 6th & 7th   |
| Sysmac Studio Programming    | March 13th        |
| Maintenance PLC              | March 27th        |
| Basic PLC                    | April 3rd & 4th   |
| Advanced PLC                 | April 17th & 18th |
| PLC Function Block           | April 24th        |
| Sysmac Studio HMI Operations | May 1st & 2nd     |
| Sysmac Studio PLC Operations | May 8th & 9th     |
| Sysmac Studio Programming    | May 15th          |
| Sysmac Studio PLC Operations | Sept 4th & 5th    |
| Sysmac Studio Programming    | Sept 11th         |
| Sysmac Studio HMI Operations | Sept 18th & 19th  |
| Maintenance PLC              | Sept 25th         |
| Basic PLC                    | Oct 2nd & 3rd     |
| Advanced PLC                 | Oct 16th & 17th   |
| PLC Function Block           | Oct 23rd          |
| Sysmac Studio PLC Operations | Nov 6th & 7th     |
| Sysmac Studio Programming    | Nov 13th          |
| G9SP / NE1A                  | As Required       |
| Yaskawa V1000 / GA500        | As Required       |

Also check out our website for an up-to-date list of available classes and to register.

[www.lakewoodautomation.com](http://www.lakewoodautomation.com)

Click on the Support page.

LAKWOOD AUTOMATION  
 27911 CLEMENS ROAD  
 WESTLAKE, OHIO 44145  
 PHONE (440) 808 4820  
 FAX (440) 899 0493  
[technical@lakewoodautomation.com](mailto:technical@lakewoodautomation.com)



## 2024 TRAINING SCHEDULE

**Y A S K A W A G A 5 0 0 V F D**  
 Training Course is to introduce an individual to the basic concepts of a Variable Frequency Drive (VFD) using a mixture of lectures, hands on labs, and simulation software. This course is designed for the individual with little or no prior VFD experience. The topics that are covered in the course are as follows: drive sizing based upon Horsepower of the motor or Kilowatts of the motor; installation practices; specifications of the VFD; electrical installation including wiring; programming of the most common parameters; troubleshooting; Drive Wizard Industrial software use; and sample application examples. A good understanding of the Windows operating system will be assumed. A Laptop computer with Drive Wizard Industrial installed is required.

### Billing and Cancellation Policy

*Lakewood Automation reserves the right to cancel or change training dates and will not be held liable for any expenses, loss of income, or inconvenience caused.*

*All classes will be invoiced or cancelled 14 days before the class begins. If you need to cancel, it must be done before this date.*

*All No Charge classes will be billed \$200 for a no show or cancelling within 48 hours of the class. If you attend the class there will be no charge.*

### For All Classes

You must have a good understanding of the Windows operating system. You must have administrator privileges to install software, drivers, and change the IP address on your PC.

### For Maintenance PLC, Basic PLC, Advanced PLC, and PLC Function Block Classes

A Laptop computer with CX-Programmer v9.81 or newer installed and a USB cable is required.

### For all Sysmac Studio Classes

A Laptop computer with Sysmac Studio v1.56 or newer installed and a USB cable is required.