

**KNOWLEDGE  
IS POWER!**

To Register:  
800-858-6879  
www.impactu.com

★ HANDS ON ★ ★ HANDS ON ★  
**PROGRAMMABLE  
LOGIC CONTROLLERS**  
MAINTENANCE AND TROUBLESHOOTING

**ONE DAY OF *INTENSIVE* TRAINING**



Now In Our  
**10th  
Year**

**WE WILL TRAIN YOU!  
NO PREVIOUS PLC EXPERIENCE  
NECESSARY**

**THIS CLASS CAN BE TAUGHT AT YOUR FACILITY!!!**



**Impact**  
Training Services, Inc.

Training that "WORKS" <sup>SM</sup>

# PROGRAMMABLE LOGIC CONTROLLERS

## WHO WE ARE

As a company, we are dedicated to providing practical, working solutions to the problem areas of industry. We represent no manufactures and will not subject you to any sales pitches. What we offer is quality technical training that works.

## OUR INSTRUCTORS

Your instructor will be knowledgeable, enthusiastic, personable and effective. You evaluate them at the end of each class. We do not use contractors. All of our instructors are full time employees and have a vested interest in delivering a quality product. Each is well versed in the subjects they teach, has received extensive on-the-job training and follows the same course lesson plan so you receive identical information regardless of who teaches the class.

## WHO SHOULD ATTEND

This is a basic class designed for maintenance and engineering personnel, operators, supervisors and managers. There are no prerequisites for this course.

## CLASS TIMES

7:30 am	Registration
8:00 am	Morning Session Begins
11:30 - 12:20 am	Lunch (on your own)
12:30 pm	Afternoon Session Begins
4:15 pm	Post evaluation
4:30 pm	Class Ends

## SUBSTITUTION OR CANCELLATION

Cancellation made SEVEN business days prior to seminar date will receive a full refund. Substitutions can be made at any time. Cancellations made less than SEVEN business days will be issued a credit memo good for two years. Registered attendees who fail to show up or have not given proper notice of cancellation will not receive refund or credit.

## PAST CUSTOMERS

3M Touch Systems • ABB, Inc. • Abbott Diabetes Care • ABC Packaging • Advanced Foods • AES • AGC Automotive • Airite • Allied Signal • Alcoa Power Generating • ARCO • AT&T • BOC Gases • BP Oil • Bridgestone Firestone • Cargill • Caterpillar • Champion International • Chevron • Chrysler Clorox • Coca-Cola • Cooper Tire & Rubber • Dana Corp • DART • Delphi Automotive • Dow Corning • Delco Remy America • Dupont • Eaton Corp ENSR • Exxon Mobil • FedEx • Ford • Frito Lay • GAF • General Electric • General Motors • Genesee Power Station • Georgia Pacific • Goodyear Hallmark Cards • Hewlett Packard • Honeywell • IBM • International Paper • Johnson Controls • Kellogg • Lucent Technologies • Mobil • Moody AFB Monsanto • Nabisco • Oxy USA • PackerWare • Parker Hannifin • Pepsi Cola • Perdue Farms • Pepperidge Farms • Phillip Morris • Playtex • Pillsbury Pratt & Whitney • Proctor & Gamble • PSEG • REA Contracting • Ralston Purina • RJ Reynolds • Rockwell Automation • Sara Lee • Shell Oil Sherwin Williams • Siemens • Smurfit Stone • Teksid Aluminum • Texas Instruments • Timken • Trammel Crow • TRW Tyson Foods • United Technologies • US Airforce • US Army Corp of Engr • US Filter • Walt Disney • Westinghouse • Wheelabrator • Xcel Energy

## COURSE OBJECTIVES


Upon successful course completion, you will be able to:

- ▶ Write/edit/document/download/monitor programs
- ▶ Troubleshoot PLC's using a voltmeter and the program
- ▶ Isolate problems quickly to the PLC or machine/process
- ▶ Explain how PLC's work and how programs are executed
- ▶ Use ladder logic programs to replace electrical circuits
- ▶ Use DirectSOFT5™ programming software

You will be able to immediately apply what you have learned on the plant floor.



## CONTINUING EDUCATION UNITS (CEUs)

Impact Training Services, Inc. is an authorized provider (#6284) of CEUs. We are accredited by  The International Association of Continuing Education and Training (IACET). Upon successful completion of the course objectives, participation in all learning activities and end-of-course evaluation students will be awarded 0.7 CEU's.

## TRAINING AT YOUR FACILITY

Bring any of Impact Training Services, Inc. electrical training programs to your facility. For more information:

**Call (800) 858-6879**

You may also visit us on the web at:

**[www.impactu.com](http://www.impactu.com)**

## COURSES OFFERED:

- Reading Electrical Drawings
- Electrical Safety
- Industrial Electricity
- Troubleshooting Electrical Controls
- Programmable Logic Controllers Fundamentals
- Allen Bradley SLC500™ and RSLogix500™
- ControlLogix™ and RSLogix5000™

**Visit us today at [www.impactu.com](http://www.impactu.com)**

# COURSE OUTLINE

## EQUIPMENT USED

AUTOMATIONDIRECT DL105™ PLCs  
DIRECTSOFT5™ PROGRAMMING SOFTWARE  
LAPTOP COMPUTERS  
VOLTMETERS  
TEXT AND LAB MANUAL

## GENERAL TOPICS

### PLC SECTIONS

Power Supply  
Central Processing Unit (CPU)  
Memory  
Data  
Program  
Input Section / Output Section

### SCANNING

How Programs are Executed  
Data Memory Operation

### INPUT AND OUTPUT BOARDS

Types  
Functions  
Termination  
Isolation  
Translation  
Threshold Detection  
Indication

## LADDER LOGIC TOPICS AND, OR, NOT

### LOGICAL CONTINUITY

### READING LADDER LOGIC

### INSTRUCTIONS

Input/Output  
Internal Coils  
Set/Reset  
Timers/Counters

## HANDS-ON LABS

### USING AUTOMATION DIRECT DL105™

PLCs and DirectSOFT5™  
Programming Software

### TROUBLESHOOTING

CPU Faults  
Power Problems

### INSTRUCTIONS

Input/Output  
Series/Parallel  
Internal Bit (Software Relay)  
Set/Reset (Software Latching Relay)  
Timers  
Counters

## TROUBLESHOOTING TOPICS

### DIAGNOSTICS

### DATA MEMORY MONITORING

### SEARCH COMMANDS

### INPUT SIDE

Switches  
Wiring  
Testing Input Boards

### OUTPUT SIDE

Loads  
Wiring  
Testing Output Boards

### CENTRAL PROCESSING UNIT

Visual Indicators  
Faults, How to Clear Them  
Lost Programs

### POWER SUPPLY

Visual Indicators  
Checking Voltage Levels  
Checking Fuses

### USING THE LADDER LOGIC TO TROUBLESHOOT

Troubleshooting With the Program  
Displaying Rungs  
Searching for Problems

• AutomationDirect DL 105™ and DirectSOFT5™ are registered trademarks of AutomationDirect

## BRING THIS CLASS TO YOUR FACILITY

(800) 858-6879 or [www.impactu.com](http://www.impactu.com)

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**PROGRAMMABLE  
 LOGIC CONTROLLERS**  
 MAINTENANCE AND TROUBLESHOOTING



PO Box 532  
 Bloomfield, KY 40008

**BRING THIS CLASS TO YOUR FACILITY!!!**


*Mailroom:* If undeliverable as addressed,  
 please route to your maintenance manager

PRSR STD  
 U.S. POSTAGE  
 PAID  
 IMPACT TRAINING  
 SERVICES, INC.

**“HANDS-ON”** **“HANDS-ON”**

**Learn to fix PLC problems on your own!**  
**THIS CLASS CAN BE TAUGHT AT YOUR FACILITY**

**FOUR WAYS TO REGISTER:**

<p><b>Seminar Fee:</b>  <b>\$489</b></p> <p><small>*With 4 registrations,              the 5th goes free!</small></p>	<ol style="list-style-type: none"> <li>1) <b>Internet</b>    www.impactu.com</li> <li>2) <b>Fax</b>        (502) 252-8060</li> <li>3) <b>Phone</b>     (800) 858-6879</li> <li>4) <b>Mail</b>        this form to: Impact Training Services, Inc.                                          PO Box 532, Bloomfield KY 40008</li> </ol>	 <b>IACET              Approved</b> <b>CEUs available</b>
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Seminar City: \_\_\_\_\_ Date: \_\_\_\_\_

Attendees: Name: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_  
 \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

Authorizing managers name: \_\_\_\_\_

Check is enclosed for \$ \_\_\_\_\_

Make Checks Payable to:  
**Impact Training Services, Inc.**

Company P.O. # \_\_\_\_\_

Attention: \_\_\_\_\_

Credit Card # \_\_\_\_\_

Name on Card \_\_\_\_\_

Type of Card \_\_\_\_\_ Exp. Date \_\_\_\_ / \_\_\_\_

Registration # \_\_\_\_\_