

A PRACTICAL INTRODUCTION TO INSTRUMENTATION AND AUTOMATION

Presented by the ISA Montreal Section



Section de
Montréal
Section

The ISA Montreal Section will be offering a practical workshop that will provide a hands-on training in the field of instrumentation and automation, suitable for practitioners in the field and for those just starting in the field.

This three-evening and one Saturday workshop is an exciting and practical introduction to the field of instrumentation and automation.

The workshop includes a full-day practical hands-on lab component that complements the learning process. The lab will provide practical experience in instrumentation and automation, such as process control and PID tuning, as well as PLC programming of a pneumatic automated system.

Lecturers with years of experience in the field present the fundamentals concepts, complemented with case studies from practitioners in the field.

You will receive a comprehensive, fully illustrated course Reference Manual that complements the optional text book.

WHAT YOU WILL LEARN:

- Instrumentation and automation term, concepts, diagrams and symbols
- Overview of the PID and PLC controller in industrial applications
- Temperature, Pressure, and Flow concepts and measurement techniques
- Overview of HMI, SCADA, and DCS systems
- Different PID tuning rules and procedures
- ISA standards and applications
- Selecting and specifying PLC hardware
- How to write, test, and verify a typical PLC program
- Converting a relay control system to a PLC controlled system
- Troubleshooting instrumentation loops and ladder logic

Evening 1 – Introduction to Automation (Thursday March 18th, 2010; 6:00 - 9:00pm)

Introduction: What is automation and process control? The need to control. Types of automatic control systems. Difference between manual and automatic control. Relationships between inputs, decisions, and output of a control system.

Evening 2 – Introduction to Instrumentation (Friday March 19th, 2010; 6:00 - 9:00pm)

Process Control: Introduction to process variables (temperature, pressure, flow, and level). The PID controller: its purpose and function. A global picture of the universal system of sense-decide-act. An introduction to ISA-5.1 and other related standards.

Day 3 – 2 half day Lab session (Saturday March 20th, 2010; 9:00am - Noon, and 1:00 - 4:00pm)

Sequential Control: Operation of a programmable logic controller (PLC); Input-output devices; Latching and sequencing; writing a ladder logic program for a typical PLC; demonstration of the use of PLC in automated pneumatic system.

Process Control: Process monitoring; Open- and closed-loop response; Set-up and calibration of real-time process monitoring; Set-up and calibration of a typical process controller; Demonstration of temperature control using PID control.

Evening 4 – Review (Monday March 22nd, 2010; 6:00 – 9:00pm)

Review of what was learned; topics for further studies; how to use the comprehensive, fully illustrated text book *Fundamentals of Industrial Control 2e*; How ISA Montreal can help you further.

Who Should Attend

Anyone whom is presently working in or would like to work in the exciting and expanding field of instrumentation and automation to gain practical knowledge of the key elements of industrial instrumentation and automation to improve their work skills and to further their job prospects:

- Sales personnel
- Maintenance Engineers and Supervisors
- Energy Management Consultants
- Design Engineers
- Project Managers
- Consulting Engineers
- Production Managers
- Chemical and Mechanical Engineers
- Instrumentation and Process Control
- Technicians

Even those who are highly experienced in industrial instrumentation and automation may find it useful to gain some hands-on know-how in a concentrated but practical format.

CERTIFICATION

Participants completing all assignments, will receive a ISA Montreal Certificate in Instrumentation and Automation



The course is based on the new updated edition of a best-selling classic *Fundamentals of Industrial Control (Practical Guides to Measurements and Control)*. This book is largely written by fellow automation professionals from the Montreal Section of ISA. Students have found the book to be a valuable reference source for years to come.

The text provides a unique balance between theory and practical applications, covering every major control system element, from sensors to final control elements, in the context of overall control strategies and system design. Contributing experts give time-tested, practical advice on the application of each system element.

This second edition provides updates on a range of topics including Internet communications, industrial communications network hardware and software, open systems, wireless networks, enterprise computing, and computer and control system security. Other sections introduce the new generation of distributed controls and digital automation systems, and present migration strategies for expanding and upgrading existing systems. Practical issues such as the use of standards and sound documentation for project management are emphasized throughout.

Chapters include Sensors; Analyzers; Process and Process Control; Final Control Elements; Computer Technology; Control System Theory; Analog and Digital Control Devices; Distributed Control Systems; Programmable Controllers; Ergonomics, Human Factors, and Safety Aspects; Systems Application and Engineering Practices.

As a bonus, the book comes with the full text and graphics on a CDROM so that you can have access not only from your bookshelf, but also from your PC or PDA for ultimate convenience.



Registration Form: A PRACTICAL INTRODUCTION TO INSTRUMENTATION AND AUTOMATION
Commencing on Thursday March 18, 2010

1. PARTICIPANT DETAILS

PARTICIPANTS NAME: MR/MS: _____

ADDRESS: _____

CITY: _____

PROV: _____

POSTAL CODE: _____

PHONE: _____

EMAIL: _____

SHOULD YOU HAVE MORE PEOPLE INTERESTED IN ATTENDING THIS COURSE, PLEASE CONTACT US BY E-MAIL AT info@isa-montreal.net

2. PAYMENT DETAILS ISA Member No. (required for member price) _____

ISA provides its Members with unparalleled access to technical information, professional development, and opportunities to network with other automation professionals. You can join ISA for as little as U\$ 100.00/year. For more information go to: http://www.isa.org/	With text book		ISA Member	Without text book	ISA Member
	BASIC COURSE	\$ 350.00	\$ 250.00	\$ 350.00	\$ 250.00
	TEXT BOOK	\$ 160.00	\$ 140.00	N/A	N/A
	SUB TOTAL	\$ 510.00	\$ 390.00	\$ 350.00	\$ 250.00
	GST (5%)	\$ 25.50	\$ 19.50	\$ 17.50	\$ 12.50
	PST (7.5%)	\$ 40.16	\$ 30.71	\$ 27.56	\$ 19.69
	TOTAL	\$ 575.66	\$ 440.21	\$ 395.06	\$ 282.19

Please make cheque payable to ISA Montreal Section 3839 Marcil, Montréal QC H4A 2Z5.

For more information: Diana Bouchard (514 484 4815, dianab@aei.ca) or
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