# ILM Publishing Report 2022: Instrumentation and Control Technician

## Quality Assurance (QA) Maintenance Summary

The ILM office held a total of 23 QA Meetings in the 2021/22 academic year, which included over 90 attendees from 8 different institutions across Alberta. With support and feedback from these individuals, we were able to address and resolve over 700 maintenance comments across all ILM trades! We want to acknowledge each of the Programs and instructors that dedicated their time and effort to supporting this important maintenance work and express our gratitude for your support in our continuous improvement of ILM content for students and learners.

For Instrumentation and Control Technician, there were 58 modules updated due to QA meeting maintenance, and a total of 133 maintenance comments were addressed. As part of this year’s ILM maintenance process, there were also a number of images and graphics within the ILMs reverted to a previous version. After significant consultation/feedback with Programs and stakeholders, the quality and accuracy of images and graphics from previous ILM versions was identified as being important for student learning and success. The *Maintenance Updates* column in the Module List section below indicates modules where this has occurred.

For more information on the ILM Comments and Maintenance process, please visit our website:

* ILM Maintenance: <https://ilm.nait.ca/ilm-maintenance>
* Comments: <https://ilm.nait.ca/comments>

QA Maintenance meeting dates for the 2022/23 academic year will be finalized and shared in September 2022.

Program Updates

There were some module number changes processed in First Period to provide alignment to the current course outline. Please note the following updates:

* **310102a: Current, Voltage and Resistance** has been renumbered to **310102b: Current, Voltage and Resistance**
* **310102b: Characteristics of Conductors** has been renumbered to **310102c: Characteristics of Conductors**
* **310102c: Resistors** has been renumbered to **310102a: Resistors**
* **310103d: Pressure Regulators** has been renumbered to **310103e: Pressure Regulators**
* **310103e: Pneumatic Components** and Feedback Systems has been renumbered to **310103d: Pneumatic Components and Feedback Systems**

## Brand Refresh

The 2022 ILM publication includes a brand refresh for all (English) ILM files. This brand refresh only impacts the style/format of ILM products. It does not impact the content within the ILMs. Changes for each ILM product type include updates to the front and back covers of ILM files, ILM Graphics PowerPoint template, and both student and instructor Digital ILM templates.

## Module List

\*Maintenance updates include image/graphic updates, addressing of website comments, and changes identified at annual Quality Assurance meetings.

### First Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version[[1]](#footnote-2)** | **Maintenance Updates\*** | **Rebrand Updates**  |
| 310101aA | Introduction to Apprenticeship, Safety and Occupation Skills - Part A | 24.0 |  | ü |
| 310101aB | Introduction to Apprenticeship Safety and Occupation Skills - Part B | 24.0 | ü | ü |
| 310101bA | Basic Tools - Part A | 24.0 | ü | ü |
| 310101bB | Basic Tools - Part B | 24.0 | ü | ü |
| 310101c | Tube Bending and Tube Joining | 24.0 | ü | ü |
| 310101d | Pipe Threading and Joints | 24.0 | ü | ü |
| 310101e | Mounting and Support Hardware | 24.0 | ü | ü |
| 310101f | Precision Measurement | 24.0 | ü | ü |
| 310101g | Electrical and Electronic Connections | 24.0 | ü | ü |
| 310102a | Resistors | 24.0 | ü | ü |
| 310102b | Current Voltage and Resistance | 24.0 | ü | ü |
| 310102c | Characteristics of Conductors | 24.0 | ü | ü |
| 310102d | Series Resistive Circuits | 24.0 |  | ü |
| 310102e | Parallel Resistive Circuits | 24.0 | ü | ü |
| 310102f | Series-Parallel Resistive Circuits | 24.0 | ü | ü |
| 310102g | Work Energy Power and Efficiency | 24.0 | ü | ü |
| 310102h | Cells and Batteries | 24.0 | ü | ü |
| 310102iA | Magnetism Electromagnetism and Electromagnetic Induction - Part A | 24.0 | ü | ü |
| 310102iB | Magnetism Electromagnetism and Electromagnetic Induction - Part B | 24.0 | ü | ü |
| 310102jA | Fundamentals of Alternating Current - Part A | 24.0 | ü | ü |
| 310102jB | Fundamentals of Alternating Current - Part B | 24.0 | ü | ü |
| 310102k | Inductance and Inductive Reactance | 24.0 | ü | ü |
| 310102l | Capacitance and Capacitive Reactance | 24.0 | ü | ü |
| 310102m | Time Constants | 24.0 | ü | ü |
| 310102n | Regulations | 24.0 | ü | ü |
| 310102o | Area Classifications | 24.0 | ü | ü |
| 310102pA | Electrical Equipment in Hazardous Locations - Part A | 24.0 | ü | ü |
| 310102pB | Electrical Equipment in Hazardous Locations - Part B | 24.0 | ü | ü |
| 310102pC | Electrical Equipment in Hazardous Locations - Part C | 24.0 | ü | ü |
| 310103a | Pressure Measurement | 24.0 | ü | ü |
| 310103b | Link and Lever Systems | 24.0 | ü | ü |
| 310103c | Pressure Gauges | 24.0 |  | ü |
| 310103d | Pneumatic Components and Feedback Systems | 24.0 | ü | ü |
| 310103e | Pressure Regulators | 24.0 | ü | ü |
| 310103f | Pressure Transmitters | 24.0 | ü | ü |
| 310103g | Chart Recorders | 24.0 | ü | ü |
| 310104a | Reciprocating Control Valves | 24.0 |  | ü |
| 310104b | Rotary Control Valves | 24.0 | ü | ü |
| 310104c | Actuators | 24.0 |  | ü |
| 310104d | Valve Positioners | 24.0 | ü | ü |
| 310104e | Control Valve Selection | 24.0 | ü | ü |
| 310104f | Control Valve Servicing | 24.0 | ü | ü |
| 310105aA | SI and Imperial Units and Basic Mathematics - Part A | 24.0 | ü | ü |
| 310105aB | SI and Imperial Units and Basic Mathematics - Part B | 24.0 |  | ü |
| 310105b | Motion and Force | 24.0 |  | ü |
| 310105c | Pressure | 24.0 | ü | ü |
| 310105d | Work and Power | 24.0 | ü | ü |
| 310105e | Energy | 24.0 | ü | ü |
| 310105f | Fluid Principles | 24.0 |  | ü |
| 310105g | Heat and Temperature | 24.0 |  | ü |
| 310105h | Laws of Perfect Gases | 24.0 | ü | ü |
| 310105i | Solids | 24.0 | ü | ü |

### Second Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 310201a | Temperature Measurement | 24.0 | ü | ü |
| 310201b | Thermometers and Filled Thermal Systems | 24.0 | ü | ü |
| 310201c | Thermocouples | 24.0 | ü | ü |
| 310201d | R﻿esistance Temperature Detector (RTD’s) | 24.0 |  | ü |
| 310201e | Non-Contact Temperature Measurement | 24.0 | ü | ü |
| 310201f | Flow Measurement Fundamentals | 24.0 | ü | ü |
| 310201g | Differential Pressure Measurement | 24.0 | ü | ü |
| 310201h | Differential Pressure Flow Measurement | 24.0 | ü | ü |
| 310201i | Variable Area Flowmeters Weirs Flumes and Flow Switches | 24.0 | ü | ü |
| 310201j | Level Measurement | 24.0 |  | ü |
| 310201k | Differential Pressure Level Measurement | 24.0 |  | ü |
| 310202a | Introduction to Automatic Control | 24.0 | ü | ü |
| 310202b | On-Off Controllers | 24.0 |  | ü |
| 310202cA | PID Control - Part A | 24.0 |  | ü |
| 310202cB | PID Control - Part B | 24.0 |  | ü |
| 310202d | Pneumatic Controller Tuning | 24.0 |  | ü |
| 310203aA | Electrical Theory - Part A | 24.0 |  | ü |
| 310203aB | Electrical Theory - Part B | 24.0 |  | ü |
| 310203b | Power Supplies | 24.0 | ü | ü |
| 310203c | Introduction to Digital | 24.0 | ü | ü |
| 310203d | Logic Gates | 24.0 | ü | ü |
| 310203e | Microprocessors and Memory | 24.0 |  | ü |
| 310203fA | Introduction to Programmable Logic Controllers - Part A | 24.0 | ü | ü |
| 310203fB | Introduction to Programmable Logic Controllers - Part B | 24.0 | ü | ü |
| 310203gA | Introduction to Data Communications Part A | 24.0 | ü | ü |
| 310203gB | Introduction to Data Communications Part B | 24.0 | ü | ü |
| 310203h | Introduction to Personal Computers | 24.0 | ü | ü |
| 310204a | Drawings and Symbols | 24.0 | ü | ü |
| 310204b | Gas Compression | 24.0 |  | ü |
| 310204c | Liquid Pumping | 24.0 | ü | ü |
| 310204d | Solids and Liquids | 24.0 |  | ü |
| 310204e | Heat Transfer and Evaporation | 24.0 |  | ü |
| 310204f | Drying Humidification and Dehumidification | 24.0 | ü | ü |
| 310204g | Distillation and Fractionation | 24.0 | ü | ü |
| 310204h | Boilers and Direct Fired Heaters | 24.0 | ü | ü |
| 310204i | Production and Processing Plants | 24.0 | ü | ü |
| 310204j | Gas Detection | 24.0 | ü | ü |
| 310204k | Fire and Smoke Detection | 24.0 | ü | ü |
| 310204l | Emergency Shutdown Systems | 24.0 |  | ü |
| 310204m | Relieving Devices | 24.0 | ü | ü |
| 310204n | Pneumatic Systems | 24.0 |  | ü |
| 310204o | Hydraulic Systems | 24.0 | ü | ü |
| 310204p | Electrical Systems | 24.0 | ü | ü |

### Third Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 310301a | Analog Loops | 24.0 | ü | ü |
| 310301b | Grounding and Shielding Methods | 24.0 |  | ü |
| 310301c | Digital-to-Analog Conversion | 24.0 |  | ü |
| 310301d | Signal Conditioning | 24.0 |  | ü |
| 310301e | Smart Instruments | 24.0 |  | ü |
| 310301f | Single Loop Digital Controllers | 24.0 |  | ü |
| 310302a | Accuracy and Repeatability | 24.0 |  | ü |
| 310302b | Measurement Traceability | 24.0 | ü | ü |
| 310302c | Differential Pressure | 24.0 |  | ü |
| 310302d | Nuclear | 24.0 | ü | ü |
| 310302e | Ultrasonic and Radar | 24.0 | ü | ü |
| 310302f | Capacitance/Thermal Dispersion/Optical/ Magnetostrictive | 24.0 | ü | ü |
| 310302g | Solids | 24.0 |  | ü |
| 310302h | Flow Measurement | 24.0 |  | ü |
| 310302i | Differential Pressure Elements | 24.0 | ü | ü |
| 310302j | Magnetic Flowmeters | 24.0 |  | ü |
| 310302k | Turbine Flowmeters | 24.0 |  | ü |
| 310302l | Vortex Flowmeters | 24.0 | ü | ü |
| 310302m | Ultrasonic Flowmeters | 24.0 | ü | ü |
| 310302n | Mass Flowmeters | 24.0 | ü | ü |
| 310302o | Positive Displacement | 24.0 |  | ü |
| 310302p | Flow Computers | 24.0 |  | ü |
| 310303aA | Matter - Part A | 24.0 | ü | ü |
| 310303aB | Matter - Part B | 24.0 | ü | ü |
| 310303bA | Inorganic Compounds - Part A | 24.0 | ü | ü |
| 310303bB | Inorganic Compounds - Part B | 24.0 | ü | ü |
| 310303cA | Chemical Calculations - Part A | 24.0 | ü | ü |
| 310303cB | Chemical Calculations - Part B | 24.0 | ü | ü |
| 310303dA | Chemical Reaction - Part A | 24.0 | ü | ü |
| 310303dB | Chemical Reaction - Part B | 24.0 |  | ü |
| 310303eA | Organic Chemistry - Part A | 24.0 | ü | ü |
| 310303eB | Organic Chemistry - Part B | 24.0 | ü | ü |
| 310303f | Viscosity | 24.0 | ü | ü |
| 310303g | Metallurgy | 24.0 | ü | ü |
| 310304a | Process Analyzers | 24.0 | ü | ü |
| 310304bA | Analyzer Sampling Systems - Part A | 24.0 | ü | ü |
| 310304bB | Analyzer Sampling Systems - Part B | 24.0 | ü | ü |
| 310304cA | Gas Analyzers - Part A | 24.0 |  | ü |
| 310304cB | Gas Analyzers - Part B | 24.0 | ü | ü |
| 310304cC | Gas Analyzers - Part C | 24.0 | ü | ü |
| 310304dA | Liquid Analyzers - Part A | 24.0 | ü | ü |
| 310304dB | Liquid Analyzers - Part B | 24.0 |  | ü |
| 310304dC | Liquid Analyzers - Part C | 24.0 | ü | ü |
| 310304e | Physical Property Analyzers | 24.0 |  | ü |
| 310304f | Vibration Monitoring | 24.0 | ü | ü |
| 310305a | Closed Loop Analysis | 24.0 |  | ü |
| 310305b | Process Loop Dynamics | 24.0 | ü | ü |
| 310305cA | Closed Loop Control - Part A | 24.0 | ü | ü |
| 310305cB | Closed Loop Control - Part B | 24.0 | ü | ü |
| 310305dA | Digital Controller Tuning - Part A | 24.0 | ü | ü |
| 310305dB | Digital Controller Tuning - Part B | 24.0 | ü | ü |
| 310305e | Cascade Control | 24.0 | ü | ü |
| 310305f | Selective Control | 24.0 | ü | ü |

### Fourth Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Module Number** | **Module Name** | **New Version**1 | **Maintenance Updates\*** | **Rebrand Updates**  |
| 310401a | Multi Variable Control | 24.0 | ü | ü |
| 310401b | Ratio Control | 24.0 | ü | ü |
| 310401c | Feedforward Control | 24.0 | ü | ü |
| 310401d | Split Range Control | 24.0 | ü | ü |
| 310401e | Distillation Control | 24.0 | ü | ü |
| 310401f | Boiler Control | 24.0 | ü | ü |
| 310401g | Compressor Control | 24.0 | ü | ü |
| 310401h | Safety Instrumented Systems (SIS) | 24.0 | ü | ü |
| 310402aA | Signal Transmission Systems - Part A | 24.0 | ü | ü |
| 310402aB | Signal Transmission Systems - Part B | 24.0 | ü | ü |
| 310402b | Communication Signal Converters | 24.0 |  | ü |
| 310402cA | Protocols - Part A | 24.0 | ü | ü |
| 310402cB | Protocols - Part B | 24.0 | ü | ü |
| 310402dA | Industrial Networks - Part A | 24.0 | ü | ü |
| 310402dB | Industrial Networks - Part B | 24.0 | ü | ü |
| 310402e | Supervisory Control and Data Acquisition (SCADA) | 24.0 |  | ü |
| 310403aA | Programmable Logic Controllers - Part A | 24.0 | ü | ü |
| 310403aB | Programmable Logic Controllers - Part B | 24.0 | ü | ü |
| 310403aC | Programmable Logic Controllers (PLC) - Part C | 24.0 | ü | ü |
| 310403aD | Programmable Logic Controllers (PLC) - Part D | 24.0 | ü | ü |
| 310403bA | Distributed Control Systems - Part A | 24.0 | ü | ü |
| 310403bB | Distributed Control Systems - Part B | 24.0 | ü | ü |
| 310403bC | Distributed Control Systems - Part C | 24.0 | ü | ü |
| 310403c | Variable Speed Drives (VSD) | 24.0 | ü | ü |
| 310403d | Human Machine Interfaces (HMI) | 24.0 | ü | ü |
| 310404aA | Process Chromatography - Part A | 24.0 | ü | ü |
| 310404aB | Process Chromatography - Part B | 24.0 |  | ü |
| 310404b | Mass Spectrometry | 24.0 | ü | ü |
| 310404cA | Environmental Monitoring - Part A | 24.0 |  | ü |
| 310404cB | Environmental Monitoring - Part B | 24.0 | ü | ü |
| 310404d | Spectroscopic Analyzers | 24.0 | ü | ü |
| 310404e | Infrared Analyzers | 24.0 | ü | ü |
| 310404f | Ultraviolet Analyzers | 24.0 | ü | ü |
| 310404g | Chemiluminescence | 24.0 | ü | ü |
| 310404h | Maintenance Planning | 24.0 | ü | ü |
| 310404i | Workplace Coaching Skills | 24.0 | ü | ü |
| 310404j | Alberta’s Industry Network | 24.0 | ü | ü |
| 310404k | Interprovincial Standards Red Seal Program | 24.0 | ü | ü |

### Additional Modules

n/a

1. ILMs are updated on a module-by-module basis; not all modules in a Period are updated within the same cycle, and a combination of different version numbers within a Period is normal. **However, every module has received a new version number for the 2022 publishing cycle to reflect their rebranding.** The most current, published version of each module will always be the version that is posted on the [Order Modules](https://ilm.nait.ca/order-modules) page of the ILM website. [↑](#footnote-ref-2)