

Instrumentation and Control Technician (ISA) Apprenticeship Curriculum Mapping

Program Curriculum

A collection of 15 CTS courses has been developed to align with the current Instrumentation and Control Technician Apprenticeship Course Outline. These courses, when combined, cover the First Period technical training content.

Alberta Apprenticeship Training Profile First Period	CTS Course Alignment to Apprenticeship First Period Topics	Assessment
Topic	CTS Course Number and Name	
SECTION ONE – SAFETY, SHOP PRACTICES, THEORY AND LABORATORY		
Safety Legislation, Regulations and Industry Policy in the Trades	ISA3900: Apprenticeship Safety	
Climbing, Lifting, Rigging and Hoisting		
Hazardous Materials and Fire Protection		
Apprenticeship Training Program		
Tools and Equipment	ISA3400: Tools & Equipment	
Tube Bending and Joining	ISA3405: Tube Practice	
Pipe Threading and Joints	ISA3410: Pipe Practice	
Mounting and Support Hardware		
Precision Measurement		
Electrical and Electronic Connections		
SECTION TWO – ELECTRICAL THEORY AND SAFETY		
Resistors	ISA3415: Electrical Theory	
Current, Voltage, Resistance and Power		
Characteristics of Conductors		
Series Resistive Circuits	ISA3420: Resistive Circuits	
Parallel Resistive Circuits		
Series–Parallel Resistive Circuits		
Cells and Batteries	ISA3425: Power & Efficiency	
Magnetism, Electromagnetism and Electromagnetic Induction		
Fundamentals of Alternating Current (AC)	ISA3430: Inductance & Capacitance	
Alternating Current (AC) Circuit Properties		
Inductance and Inductive Reactance		
Time Constants		
Inductive Reactance and Capacitive Reactance		

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Topic	CTS Course Number and Name	
SECTION TWO – ELECTRICAL THEORY AND SAFETY CONTINUED		
Regulations	ISA3435: Hazards & Regulations	
Area Classifications		
Electrical Equipment in Hazardous Locations		
SECTION THREE – BASIC MEASUREMENTS AND CALIBRATION		
Pressure Measurement	ISA3440: Pressure Measurement	
Link and Lever Systems		
Pressure Gauges		
Pneumatic Components and Feedback Systems		
Pressure Regulators	ISA3445: Calibration	
Pressure Transmitters		
Chart Recorders		
SECTION FOUR – FINAL CONTROL ELEMENTS		
Reciprocating Control Valves	ISA3450: Control Elements	
Rotary Control Valves		
Actuators		
Valve Positioners	ISA3455: Control Valves	
Control Valve Selection		
Control Valve Servicing		
SECTION FIVE – APPLIED PHYSICS AND MATHEMATICS		
SI and Imperial Units and Basic Mathematics	ISA3460: Applied Math	
Motion and Force		
Work and Power		
Energy		
Fluid Principles	ISA3465: Applied Physics	
Heat and Temperature		
Laws of Perfect Gases		
Solids		

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CTS COURSES THAT ALLOW STUDENTS ADDITIONAL PRACTICAL TIME		
	ISA3470: ISA Practicum A	
	ISA3475: ISA Practicum B	
	ISA3480: ISA Practicum C	
	ISA3485: ISA Practicum D	