

## Instrument Technician

### Duties

Instrument technicians install, maintain and repair the measuring and control instruments used in industrial and commercial processing.

Instrument technicians work with a wide variety of pneumatic, electronic and microcomputer instruments used to measure and control variables such as pressure, flow, temperature, level, motion, force, and chemical composition. In general, they:

- Consult manufacturers' manuals to determine test and maintenance procedures
- Use pneumatic, electrical and electronic testing devices to inspect and test instrument and system operation, and diagnose faults
- Practice loss management principles
- Consult with and advise process operators
- Train apprentices
- Repair, maintain and adjust system components or remove and replace defective parts
- Do risk assessments
- Calibrate and maintain components and instruments according to manufacturers' specifications
- Work with engineers on basic design
- Install and maintain instruments on new or existing plant equipment and processes
- Interpret and use appropriate CSA, ISA and API installation standards and practices

### Working Conditions

Instrument technicians may work regular week-day hours or work in shifts, and are sometimes “on call” at night and on weekends. Working conditions can change dramatically from one job to another. Instrument technicians working with manufacturing processes may be exposed to confined spaces, high places, noisy, dusty, cold or unusually warm conditions. There may also be exposure to radiation devices and laser equipment.

There is some risk of injury, particularly when processing dangerous chemicals or working with substances under pressure or at high temperatures.



## Skills and Abilities

The work is most rewarding for those who enjoy security, problem-solving, developing an area of expertise, and working with little direction or supervision.

### To be successful in their trade, instrument technicians need:

- The ability to pay careful attention to details
- Good communication and reading skills,
- Manual dexterity and patience
- The ability to lift between 11 and 25 kilograms
- Good mathematical, scientific, mechanical and logical reasoning abilities
- The ability and desire to keep up-to-date with technological developments in the field

## Employment and Advancement

With industry becoming increasingly automated, instrument technicians are needed virtually anywhere there are control and metering systems. **They are employed in the following industries:**

- Pulp and paper processing
- Hydro power generation
- Mining, petrochemical and natural gas
- Industrial and commercial manufacturing
- Industrial construction
- Industrial instrument servicing

Journeyman wage rates vary, but generally range from **\$25 to \$40 an hour plus benefits.**

Experienced instrument technicians may advance to supervisory positions, be employed as engineering technicians, or move into company sales offices.



## Working in Alberta

### To work as an Instrument Technician in Alberta, a person must:

- Be a registered apprentice, an Alberta-certified journeyperson, hold a valid recognized credential, OR
- Work for an employer who is satisfied that the worker has the skills and knowledge expected of a certified journeyperson, OR
- Be self-employed

Instrument technicians learn their skills by registering with Alberta Apprenticeship and Industry Training to participate in apprenticeship training. Upon successful completion, they are awarded the Alberta Journeyman Certificate.

An instrument technician who holds a valid trade certificate from Alberta or from another Canadian province or territory may apply to write the Interprovincial Exam and, if successful, be granted a Red Seal under the Interprovincial Standards Red Seal Program. The Red Seal is recognized throughout most of Canada.

### An instrument technician who holds a valid recognized credential that does not have a Red Seal may apply for:

- an Alberta trade certificate under the Qualification Certificate Program
- an Alberta Equivalency document under the Equivalency Program.
  - Instrument technicians who:
- Hold a credential that is not recognized or is no longer valid in an Alberta-designated trade, OR
- Can demonstrate their experience, skills and knowledge in an Alberta-designated trade, and meet the standards and requirements established by the Alberta Apprenticeship and Industry Training Board
  - may be eligible to apply for trade certification under the Qualification Certificate Program.

Individuals possessing a valid Alberta Journeyman Certificate, an Alberta Qualification Certificate, an Alberta Occupational Certificate, or a valid recognized credential are eligible to receive a Blue Seal business credential after completing the necessary requirements.



## Apprenticeship Training

The term of apprenticeship for an instrument technician is 4 years (four 12-month periods) including a minimum of 1500 hours of on-the-job training and 8 weeks of technical training in the first and second year, and a minimum of 1425 hours of on-the-job training and 10 weeks of technical training in the third and fourth year.

- An applicant who previously completed courses of study or work experience related to the Instrument Technician trade or holds a related journeyman certificate and has the employer's recommendation, may qualify for credit that could reduce the term of apprenticeship. (see Accreditation Information for a list of accredited courses)
- A person who has previous training or work experience in the trade and wants to determine their level of skill and knowledge for entry or advanced standing in an apprenticeship program may apply for a Prior Learning Assessment.
- A high school student can become an apprentice and gain credits toward apprenticeship training and a high school diploma at the same time under the Registered Apprenticeship Program (RAP)

### **To learn the skills required of an Instrument Technician in Alberta and be issued an Alberta Journeyman Certificate, a person must:**

- Satisfy the entrance requirements or pass the entrance exam (see Entrance Level Competencies, Exam Counselling Sheet, Entrance Exam Study Guide, and Entrance Exam Support Materials List)
- Find a suitable employer who is willing to hire and train an apprentice
  - *Most employers prefer to hire high school or post-secondary program graduates who have strong backgrounds in the chemical and physical processes involved in instrumentation.*
- With their employer, complete the Apprenticeship Application and Contract and submit it to an Apprenticeship and Industry Training Office
- Pay the non-refundable application fee as identified on the application noted above
- Complete the required on-the-job training
  - during on-the-job training, apprentice instrument technicians earn at least 55 percent of the journeyman wage rate in their place of employment in the first year, 65 percent in the second, 75 percent in the third, and 85 percent in the fourth year.
- Complete the required technical training each year (see Course Outline)
- Enroll in technical training (see Technical Training Centre)



- select an educational institution that offers training for Instrument Technician apprentices, and a time to attend training
  - determine requirements for enrolling at the selected institution, and forward completed enrollment form to the selected institution
- Review books and materials required for training (see Textbook and Resource List)
- Successfully complete all required exams (see Exam Counselling Sheets)
  - review the Apprenticeship and Industry Training Policy on Cheating
- Apprentices may attempt the Interprovincial Exam in the final period of their apprenticeship training and, if successful, be granted a Red Seal. (see Exam Counselling Sheets)
- Review the Apprenticeship and Industry Training Policy on Cheating

When apprentices attend technical training, they are required to pay the applicable tuition fee and purchase course supplies.

Grants, scholarships and other financial assistance may be available. For more information see Financial Assistance or contact an Apprenticeship and Industry Training Office.

## **Interprovincial Standards Red Seal Program**

### **To qualify for a Red Seal, a person must:**

- Hold a valid trade certificate in a trade that participates in the Interprovincial Standards Red Seal Program:
- An Alberta trade certificate or completion of apprenticeship certificate, OR
- A journeyman or completion of apprenticeship certificate issued by another Canadian province or territory
- For applications based on Alberta certificates
  - complete the Interprovincial (Red Seal) Examination Application - Alberta Certified (no application fee is required)
  - submit the application to an Apprenticeship and Industry Training Office
- For applications based on non-Alberta certificates
  - complete the Qualification Certificate – Recognized Credential Application
  - submit the application to an Apprenticeship and Industry Training Office
  - pay the non-refundable application fee as identified on the application form
- Prepare for the exam (see Exam Counselling Sheets)
  - review the Apprenticeship and Industry Training Policy on Cheating



- review available resource materials (see Resource Materials - Instrument Technician )
- Successfully complete the required exam

## Equivalency Program

**To qualify for an Equivalency document *based on a recognized credential*, a person must:**

- Have a valid recognized credential that does not have an Interprovincial Standards Red Seal
- Complete the Equivalency Application and deliver it in person to an Apprenticeship and Industry Training Office. Government issued photo identification is required.
- Pay the non-refundable application fee as identified on the application noted above

*A person who holds a valid recognized credential, as described above, does not require an Alberta Equivalency document to work in the trade in Alberta. However, some employers may require Alberta documentation as proof that the holder is allowed to work in the trade or that the holder's credential is recognized.*

## Qualification Certificate Program

**To qualify for a Qualification Certificate *based on a recognized credential*, a person must:**

- Hold a valid recognized credential that does not have an Interprovincial Standards Red Seal
- Complete the Qualification Certificate – Recognized Credential Application and submit it to an Apprenticeship and Industry Training Office.
- Pay the non-refundable application fee as identified on the application noted above
- Prepare for the exam(s) (see Exam Counselling Sheets)
  - review the Apprenticeship and Industry Training Policy on Cheating
  - review available resource materials (see Resource Materials - Instrument Technician)
- Successfully complete the required exam(s)



- To qualify for an Alberta Qualification Certificate **based on work experience**, a person must:
- Have at least 8,775 hours and 72 months of 'hands-on' work experience as an instrument technician

*Time spent on supervisory or foreman duties, counter work, heading the tool crib, or on a training course is NOT counted as 'hands-on' work experience.*

- Complete the Qualification Certificate - Work Experience Application (and review the Application Guide) and submit it to an Apprenticeship and Industry Training Office
- Pay the non-refundable fees as identified on the application noted above

*This application fee covers the review of the application, the assessment and confirmation of the applicant's work experience hours/months, the administration of the applicant's demonstration of competency, and one attempt at the Qualification Certificate theory examination. The Qualification Certificate practical examination requires a separate fee as identified on the application noted above.*

- Prepare for the exam(s) (see Exam Counselling Sheets)
  - review the Apprenticeship and Industry Training Policy on Cheating
  - review available resource materials (see Resource Materials - Instrument Technician)
- Successfully complete the required exam(s)

