

# Analytical Instrumentation Technology

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Analytical Instrumentation Technology, also known as an Analyzer Technician, is a highly skilled professional specializing in the installation, maintenance, calibration, troubleshooting, and repair of analytical instruments used in industrial processes to measure and monitor properties such as gas composition, pH, conductivity, humidity, and particulate matter. These technicians are crucial in ensuring the accuracy and reliability of industrial operations across sectors like oil and gas, petrochemicals, power generation, environmental monitoring, and pharmaceuticals.

The Analytical Instrumentation Technology Associate of Applied Science degree program prepares graduates for entry-level careers as Analytical Instrument Technicians, particularly in industries like oil and gas, petrochemical, power generation, environmental monitoring, pharmaceuticals, and manufacturing. These careers typically occur within environments such as refineries, laboratories, control rooms, and field sites.

Key attributes for success in this field include strong analytical and problem-solving skills, attention to detail, precision in measurements, the ability to work under pressure in industrial settings, and effective communication and collaboration with multidisciplinary teams.

To learn more about related careers, visit the [Technical Studies Division](#).

## What Will I Learn?

Upon successful completion of the Analytical Instrumentation Technology Degree program, graduates will be equipped with the following skills.

### Analytical Instruments

- Expertise in gas chromatographs, spectrometers, pH meters, and other advanced analytical devices.

### Process Variables

- Proficiency in monitoring and controlling gas composition, flow, temperature, and particulate concentration.

### Electronics and Networking

- Knowledge of signal processing, industrial communication protocols (e.g., HART, Modbus), and circuit diagrams.

### Safety Standards

- Adherence to strict safety protocols, including hazardous area classifications and environmental guidelines.

### Regulatory Knowledge

- Familiarity with compliance standards from OSHA, EPA, and industry-specific regulations.

[View Program Learning Outcomes](#)

## "What Can I Do With This Course of Study?"

A degree in Analytical Instrumentation will expose the student to ways in which industries ensure that their products are on-spec with high-end analyzers such as gas chromatographs. These types of careers can pay up to \$60 per hour and include the following job duties:

### **Installation and Setup**

- Install and integrate analytical instruments into industrial systems according to specifications.
- Configure devices for optimal performance and ensure compliance with safety and industry standards.

### **Calibration**

- Use calibration gases, solutions, and reference standards to adjust instruments to required performance specifications.
- Ensure the accuracy and consistency of measurements for critical variables.

### **Maintenance and Repair**

- Conduct routine maintenance to extend instrument life and prevent failures.
- Diagnose and repair malfunctioning or damaged devices, restoring their functionality.

### **Testing and Troubleshooting**

- Utilize diagnostic tools and software to identify and resolve analytical instrument or control system issues.
- Collaborate with engineers and operators to address complex problems efficiently.

### **Documentation**

- Record calibration and maintenance data, logging all repairs and adjustments.
- Prepare detailed technical reports and ensure compliance with regulatory standards.

## **Analytical Instrumentation Technology (AAS) Degree Plan**

### Semester 1

- CTEC 1401 — Applied Petrochemical Technology
- TECM 1349 — Technical Math Applications
- INTC 1312 — Instrumentation and Safety
- INTC 1456 — Instrumentation Calibration
- INTC 1441 — Principles of Automatic Control

## Semester 2

- ENGL 1301 $\Omega$  — English Composition I\*\*
- EPCT 1349 — Environmental Regulation Interpretation and Applications
- IEIR 1302 — Introduction to Direct Current Circuits
- ITCC 1414 — Introduction to Networks
- INTC 1348 — Analytical Instrumentation

## Semester 3

- SPCH 1318 — Interpersonal Communication\*\*
- CHEM 1405 $\Omega$  — Introductory Chemistry\*\*
- INTC 1374 — Analytical Instrumentation II
- INTC 2372 — Sample Systems

## Semester 4

- INTC 2371 — Physical Properties Analyzers
- INTC 2445 — Advanced Analyzers\*
- Creative Arts/Language, Philosophy and Culture\*\*
- Social/Behavioral Science\*\*

## **Analytical Instrumentation Technology - ATI1 Certificate of Completion**

### Semester 1

- CTEC 1401 — Applied Petrochemical Technology
- TECM 1349 — Technical Math Applications
- INTC 1312 — Instrumentation and Safety
- INTC 1456 — Instrumentation Calibration
- INTC 1441 — Principles of Automatic Control

### Semester 2

- EPCT 1349 — Environmental Regulation Interpretation and Applications
- IEIR 1302 — Introduction to Direct Current Circuits
- ITCC 1414 — Introduction to Networks
- INTC 1348 — Analytical Instrumentation

### Semester 3

- INTC 1374 — Analytical Instrumentation II
- INTC 2371 — Physical Properties Analyzers
- INTC 2372 — Sample Systems\*

\*Students should plan to take the capstone course in their last semester and should speak with their advisor prior to registering for the final semester.

\*\*Core curriculum course.

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## **Contact Info**

Wally Collins

Division Chair, Technical Studies

Office: TV1, Room 213A

[wcollins@lee.edu](mailto:wcollins@lee.edu)

281.425.6474