



# ADVANCED ANALYTICAL SERVICES & TRAINING

Providing you with the right team and  
the right solution every time.

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ENVIRONMENTAL

# PROVIDING YOU WITH THE RIGHT TEAM & THE RIGHT SOLUTION **EVERYTIME 24/7.**

Advanced Analytical Services & Training has become a leader in analytical and automation solutions. Our skilled team has the proven experience and knowledge to provide services for all industries. Coupled with our field construction capabilities and broad network of local and regional offices, we deliver true turn-key solutions with the highest level of expert support.

## ABOUT US

Our Advanced Analytical Services & Training team consists of fully-trained specialists with a combined 100+ years of analytical experience. We partner with customers in several ways:

- Annual site-wide service contracts
- On-demand service to troubleshoot and repair
- Planning and installation of new equipment
- On-site, customizable training



Our training courses are a good fit for plant technicians, maintenance supervisors, and other team members who wish to have a better understanding of how analytics can reduce maintenance costs, improve productivity and, ultimately, increase uptime for your plant.

## WHAT WE DO

We offer a comprehensive range of services, as well as support and training packages, that are custom-designed for your specific needs.

- Consulting, Site Surveys, Selection & Feed Study
- System Design, Integration & Fabrication
- Commissioning & Startup
- Project Management & Field Installation
- Analytical Maintenance Contracts (AMC)
- On-site Supervision & Troubleshooting
- Technical Support & Training Solutions

*We are excited for the opportunity to become your advanced analytical solutions provider!*



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# ADVANCED ANALYTICAL TRAINING SOLUTIONS



## WHAT WE DO

Provide you and your team with the expert analytical training needed to properly and safely operate and maintain your equipment and systems.

## ABOUT US

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## TRAINING CLASSES OFFERED



### SAMPLE SYSTEM BASICS FOR THE ANALYZER TECHNICIAN

For the analyzer technician, this class will approach SHS issues the technician may encounter daily and offer potential solutions



### ANALYZER TECHNICIAN 101

Introduction to various technologies a new analyzer technician may encounter, as well as basic chemistry and sample system maintenance



### BASIC CHROMATOGRAPHY

Introduction to basic theory, operation, maintenance and troubleshooting of the GC



### INTRODUCTION TO CHEMISTRY (For the Analyzer Technician)

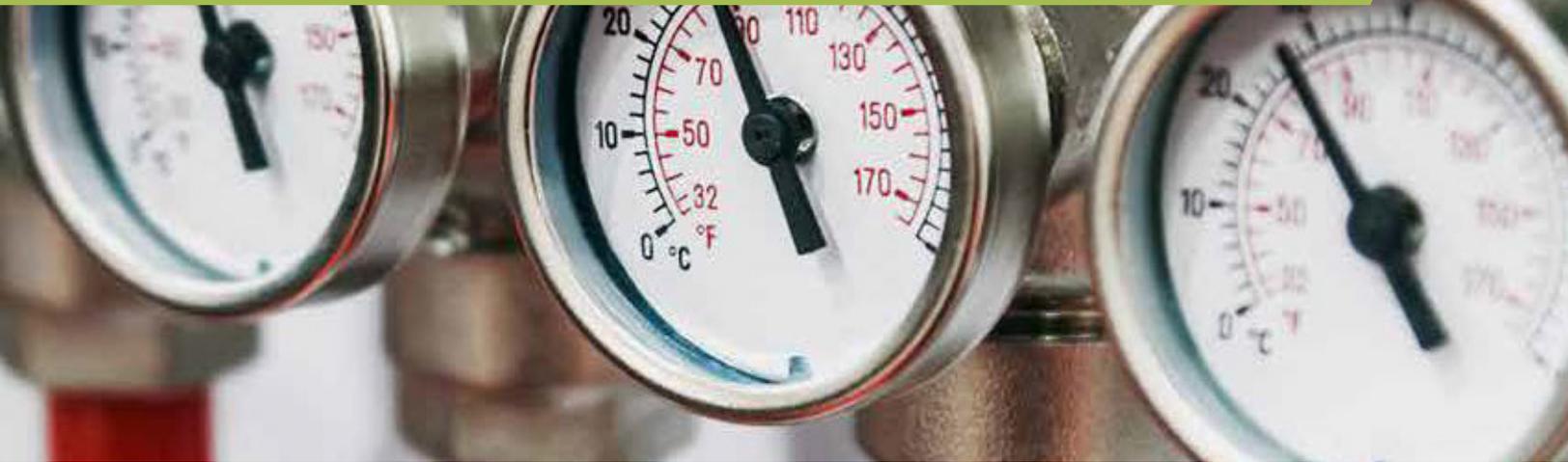
This class will introduce the technician to chemistry in an east-to-understand format. Hands-on experiments will help reinforce learning. No prerequisites

*We customize training  
by partnering with  
customers to create  
site-specific training!*

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# SAMPLE SYSTEM BASICS COURSE DESCRIPTION



## OBJECTIVES/PURPOSE

In this section we look at determining if a measurement is needed and if so, what the purpose of the measurement will be.



## TAP LOCATION

In this section we will look at factors that need to be considered when choosing a new sample tap location, as well as evaluating existing tap locations.



## TRANSPORT SYSTEM

In this section we will look at the sample transport system and how to deal with lag time with liquid and gas samples.



## CONDITIONING SYSTEM

In this section we will look at what it takes to condition the sample so that the analyzer has a usable sample.



## PHASE ISSUES

In this section we will discuss how to maintain the correct phase for the sample. We will also be looking at pressure and temperature effects on our sample.



## CALIBRATION/VALIDATION

We will discuss the difference between calibration and validation and some things we need to consider when performing a calibration.



## BASIC ANALYZER CHEMISTRY

In this section we will look at our sample from a non-technical chemistry standpoint and touch on some basic chemistry elements that will help the analyzer technician be more successful in their role.

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# ANALYZER TECHNICIAN 101 COURSE DESCRIPTION



## GENERAL OVERVIEW OF TECHNOLOGIES

In this section we will look at some of the more common, newer technologies the new analyzer technician may encounter in their daily work. Some, but not all technologies, include: TDL, Zirconia, pH, gas chromatography, paramagnetic, CEMS, gas density, etc.



## BASIC CHEMISTRY

In this section we will take a brief look at chemistry and the role it plays in the daily operation of a plant and how it may affect our analytical equipment and measurements.



## BASIC LOOP MEASUREMENTS

In this section we will look at how to use a multimeter as well as a source meter for checking loops and equipment. We will use a calibrator for checking equipment calibration as well.



## COMMUNICATIONS

In this section we will be looking at the use of different methods of communications for getting the information from our analyzer to the DCS. This will include, analog, HART, Modbus, etc.



## CALIBRATIONS VS. VALIDATION

In this section we will look at the difference between a calibration and validation and what you need to know before calibrating your analyzer.



## SAMPLE SYSTEM BASICS

In this section we will take a brief look at some basic considerations when troubleshooting an existing sample system.



## DATA ANALYSIS & DOCUMENTATION

In this section we will look at using a spreadsheet to graph and analyze data and use this information for basic troubleshooting. We will learn how to organize the information and present the information in easy to read, concise graphs. We will also discuss the value in proper documentation and some ideas for documenting your work.

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# BASIC CHEMISTRY FOR THE ANALYZER TECHNICIAN

## COURSE DESCRIPTION

### ● COURSE OVERVIEW

This training course presents the chemistry fundamentals required to understand how chemical analyzers work.

### ● CHEMISTRY AND ATOMS

Introduces the basic concepts of the science of Chemistry and the building blocks of all matter atoms.

### ● CHEMICAL BONDS AND CHEMICAL REACTIONS

This section explains how chemicals are made, exist, and how they react with one another. Hands-on demonstration is available.

### ● ACIDS AND BASES

In this section we discuss the concepts of acids and bases, two important classes of chemicals and useful for analytical techniques.

### ● ELECTROCHEMISTRY

Briefly, we will explain the topic of electrochemistry as it is the principle behind a variety of analytical technologies.

### ● PHASES OF MATTER

Discuss solids, liquids, and gases; how they are different and how phase transitions work. Critical to understanding how and why sample conditioning systems are designed and built.

### ● UNITS OF MEASURE

There's a large number of ways to measure things – psiA, psiG, Bar, kPa, torr, mmHg, inH2O...and that just a few pressure measurements! Understanding what's is being measured why helps prevent mistakes& miscommunication in the field.

### ● MIXTURES, PHASES, AND SAMPLING

In this section, we will discuss how different substances can mix (or not) to form solutions and mixtures, which is important when looking at analyzer sampling systems.

### ● ORGANIC CHEMISTRY

This section is a very basic introduction to organic chemistry concepts: for example, what's the difference between ethane, ethanol, and ethylene?

### ● WATER AND HOW TO DEAL WITH IT

In our experience, low-range moisture measurements are challenging to set up and maintain accurately (along with low-range sulfur and ammonia). This section deals with why that is, from a chemical perspective.

### ● FIRE, EXPLOSIONS, AND SAFETY

Fire and explosions are chemical reactions and a common hazard in plants, so it's a good opportunity to discuss safety in terms of the chemistry behind these.

### ● HANDS-ON EXERCISES

Throughout the entire course, we will be providing hands-on experiences with experiments and demonstrations of the topics covered. The aim is to make learning chemistry topics less of a chalkboard-and-lecture experience, and more interactive. All demonstration are safe to perform in a classroom or conference room environment.

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- Building troubleshooting techniques
- Developing analytical expertise
- Deepening knowledge of optimal equipment maintenance

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