



**MAESTRO**  
CONSULTANTS

# **ANALYTICAL INSTRUMENTATION SYSTEM**

## **COURSE OUTLINE 2020**

Contact Us On :

Tel : +971 7 2042072 |

Email: [training@maestrouae.net](mailto:training@maestrouae.net)

Website: [www.maestrouae.net](http://www.maestrouae.net)

## **TRAINING TITLE**

ANALYTICAL INSTRUMENTATION SYSTEM

## **VENUE**

Dubai, UAE

## **DURATION**

5 Days

## **DATES**

05 - 09 July 2020

## **PRICE**

US\$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet daily.

## **TRAINING INTRODUCTION**

Instrumental methods of analysis became the methods of choice in modern laboratories. Sensitivity, selectivity, multi-analyte analysis and processing large number of samples in short time contribute to this progress. Instrumental methods are usually associated with employment of small amounts of samples and minimum use of toxic reagents. This course deals with the principles and applications of modern analytical instruments. Emphasis is placed upon the theoretical basis of each type of instrument, its optimal area of application, its sensitivity, its precision, and its limitations. Electroanalytical, spectroscopic and chromatographic methods will be covered in detail. Statistical treatment of analytical data and validation of analytical method will be emphasized.

## **TRAINING OBJECTIVES**

- To introduce the student to philosophy behind instrumental methods.
- To teach the student the principles of popular instrumental methods.
- To teach the student statistical methods and validation of analytical results.
- To teach the student the complementary aspects of various instrumental methods.
- Handling of real samples related to industrial, environmental and biomedical analysis.
- How to purchase an instrument of analysis or how to get the best of it.

## **TRAINING AUDIENCE**

All scientists and engineers involved in chemical analysis and working in analytical laboratories.

## **COURSE OUTLINE**

### **Introduction to Instrumental Methods**

- Philosophy behind instrumental methods.
- Survey of instrumental methods.
- The analytical process.

### **Statistical Evaluation of Analytical Data and Validation of Analytical Method**

- Accuracy, precision, confidence intervals.
- Validation of analytical results.
- Linearity and least squares method.
- Internal standard and standard addition methods.
- Validation of analytical methods.
- Development of standard operation procedures (SOPs)

### **Electroanalytical Methods**

- Introduction to electrochemical methods
- Potentiometric methods
- Voltammetric methods

### **Spectroscopic Methods**

- Introduction to spectroscopic methods.
- Ultraviolet and Visible Absorption Spectroscopy
- Molecular Fluorescence and Phosphorescence.
- Atomic Absorption Spectroscopy.
- Atomic Emission Spectroscopy.
- Mass Spectrometry

### **Chromatographic Separations**

- Fractionation processes.
- Operational aspects of chromatographic separations.
- Gas Chromatography.
- High Performance Liquid Chromatography.

### **Sample Preparation for Instrumental Analysis**

- Sample preparation for elemental analysis.
- Sample preparation for analysis by gas chromatography.
- Sample preparation for analysis by liquid chromatography.

### **TRAINING CERTIFICATE**

**MAESTRO CONSULTANTS** Certificate of Completion for delegates who attend and complete the training course

### **METHODOLOGY**

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of “real life” issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.