Statistics for Analytical Chemists

July 31, 2017
1:00-5:15 PM
Fluno Center, Madison, WI

Goals and Objectives:

This short course is designed to provide practical information needed to apply basic statistical tests to problems typically faced in pharmaceutical analysis. Emphasis will be placed on the most commonly utilized statistical tests, including: 1) t-tests; 2) analysis of variance; 3) correlation; 4) linear regression and 5) outlier tests. The courses focuses on the efficient utilization of statistics; not abstract theory. Practical examples drawn from scientific research will be used to illustrate statistical concepts. Emphasis will be placed on the appropriate use of statistics and the interpretation of their results and presents an overview of basic elements associated with statistical tests and their practical application. Upon completion of the course, the learner should be able to:

1) define statistical terms commonly encountered in the literature and regulatory guidances;
2) describe various descriptive statistics including measures of central tendency and confidence intervals;
3) explain the use of hypothesis testing, significance testing, and sampling procedures;
4) select the appropriate statistical test given the type of data presented;
5) evaluate example problems to identify the type of variables involved and the most appropriate statistical test(s) to use; and
6) interpret statistical output form of computer generated results and evaluate the relative importance of those outcomes.

Who should attend:

The course is intended for analytical chemists and managers who deal with analytical data. It is primarily for those who have never taken a formal statistics course. However, it will also serve as an excellent review for those with previous experience in statistics; especially those who have had negative experiences with statistical instruction.

Contents:

12:30 pm Registration

1:00 pm **The Basics Required to Understand Any Inferential Statistical Test**
Includes defining the types of variables, descriptive statistics, confidence intervals vs. ratios and hypothesis testing.

2:15 pm Break

2:30 pm **Evaluating the Importance of Differences**
Using the t-tests and ANOVAs to identify significant differences.

3:30 pm Break

3:45 pm **Evaluating the Importance of Relationships**
The strength of relationships with correlation and linear regression.

4:25 pm Break

4:40 pm **Determining Outliers**
Statistically evaluating aberrant data points.

5:00 pm Open Discussion

5:15 pm Adjourn Pre-Conference Workshop

Instructor: James E. De Muth, Ph.D., R.Ph.
Professor Emeritus, Division of Pharmacy Professional Development
School of Pharmacy, University of Wisconsin, Madison, WI

Fee: $175

Register: https://ce.pharmacy.wisc.edu/pd/pharmaceuticalanalysisconf/