

## **Statistics II: ANOVA and Regression**

*This Level III course is designed for data analysts and researchers with some statistical training who want to analyze continuous response data by using SAS/STAT software to perform analysis of variance and regression methods. Using Poisson regression for discrete count data is also addressed.*

**Duration:** 3.0 days

**Course Description** [\[ Click to register ONLINE \]](#)

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This course explains techniques for performing multiple polynomial regression analysis and analysis of variance using SAS software. The course also covers Poisson regression, gamma regression, analysis of covariance, and an introduction to linear mixed models. You learn how to write SAS programs to fit linear models and interpret output. Emphasis is on fitting models, interpreting results, verifying the model assumptions, and using alternative analysis strategies when necessary.

### **Prerequisites**

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Before attending this course, you should

- have some experience creating and managing SAS data sets, which you can gain from the [SAS Programming I: Essentials](#) course
- be able to fit simple and multiple linear regression models using the REG procedure
- be able to analyze a one-way analysis of variance using the GLM procedure
- understand the statistical concepts of normal distribution, sampling distributions, hypothesis testing, and estimation
- have completed a graduate-level course in regression and analysis of variance methods or the [Statistics I: Introduction to ANOVA, Regression, and Logistic Regression](#) course.

### **Course Contents**

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#### **Regression**

- building and evaluating multiple polynomial regression models
- dealing with violations of model assumptions
- using the GENMOD procedure to fit Poisson and gamma regression models

#### **Analysis of Variance**

- performing n-way ANOVA
- interpreting significant interactions
- writing CONTRAST and ESTIMATE statements
- understanding issues associated with unbalanced data
- performing linear mixed model analysis

#### **Analysis of Covariance and Regression Using Indicator Variables**

- building and interpreting analysis of covariance models using the GLM procedure
- using and interpreting indicator variables in the REG procedure
- comparing analysis of covariance with regression using indicator variables

## **Classroom Course Materials**

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Students attend classroom courses in one of our public training centers. You receive a hardcopy of the course notes.