What You Learn in This Course

Welcome to Statistics 2: ANOVA and Regression. In this course you learn to use SAS to analyze continuous response data and categorical count data.

The table shown here lists the types of models that you might build, based on the types of response and predictor variables. In Statistics 1, you learned to fit a linear regression model using PROC GLMSELECT and PROC REG. You also learned about creating an ANOVA model using PROC GLM. In this course you review general linear models and learn to create multiple regression models. You also learn to use PROC GENMOD or PROC GLIMMIX to create generalized linear models. Finally, you learn the basics of creating linear mixed models using PROC GLIMMIX. You can learn about generalized linear mixed models by taking additional SAS training. A list of related SAS training is available in the Help and Resources section of this course.

Let's take a closer look at what you learn in each lesson.

In Lesson 1, you start by reviewing the concepts of general linear models. Then you learn to build a multiple linear regression model, fit a polynomial regression model, and use a spline effect to model a nonlinear relationship between a predictor variable and the response.

Lesson 2 begins with a review of the assumptions for linear regression. You also learn to evaluate a model for goodness of fit, multicollinearity, or the presence of influential observations. You learn remedial measures that you can apply when you've identified problems with the model and you use the GLIMMIX procedure to model a response with nonconstant variance.

In Lesson 3, you revisit the assumptions of ANOVA and learn to fit a two-way ANOVA model with interactions using PROC GLM. You learn to store your PROC GLM results for future analysis by using a STORE statement. Then you perform additional analysis with PROC PLM. Finally, you learn to evaluate model assumptions and perform remedial measures, in the event that the assumptions have been violated.

In Lesson 4, you learn to perform an analysis of covariance and interpret the results. Then you compare the least squares means for groups at a specified value of the continuous predictor variable. You also learn to perform diagnostics on an ANCOVA model.

In Lesson 5, you start by learning the basics of generalized linear models and link functions. You learn to use PROC GENMOD to fit a Poisson regression model for count data and rate data. Then you learn what overdispersion is and how to use the negative binomial distribution to correct it. Finally, you learn to identify the gamma distribution and use PROC GLIMMIX to fit a gamma regression model.

In Lesson 6, you learn the basics of linear mixed models. You also learn how to fit a linear mixed model.
