

### Course Expectations

#### Section 1: Logistic Regression Introduction

- Families of Predictive Analytics
  - Classification
  - Regression
- An Example Model
  - Logistic Regression Models as Equations
  - Predicting Labels Instead of Numbers

#### Section 2 – Numeric Literacy

- Probability
  - Events
  - Probability of an Event
- Modeling Probability
  - The Logistic Curve
  - The Logistic Curve in Excel

#### Section 3 – Logistic Regression Intro Revisited

- Putting it All Together
  - The Model
  - Modeling Probability
  - How Predictions Work
- Establishing a Baseline of Goodness
  - The Baseline Model
  - How Good is the Baseline Model?
- Goodness of Fit
  - Evaluating the Usefulness of Your Models
- The Data Used in the Course
- Hands-on Lab #1

#### Section 4 – Simple Logistic Regression

- Beating the Baseline Model
  - Crafting a Hypothesis

- Adding Predictors
- Models are Uncertain
  - It's All About the Data
  - Evaluating Goodness is Critical
- Logistic Regression Modeling in Excel
  - Setting Up the Data
  - Storing Calculations
  - Storing Model Coefficients
- Hands-on Lab #2

### **Module 5 – Multiple Linear Regression**

- When Simple Won't Do
  - Models With Multiple Predictors
  - Scaling to Multiple Linear Regression
- The Rewards of Complexity
  - Adding Predictors = Adding Complexity
  - Adding Predictors in Excel
- Interaction Effects
  - Why They Matter
  - Interaction Effects in Excel
  - Interaction Effects Example
- Categorical Data
  - Dummy Encoding
  - Dummy Encoding in Excel
- Hands-on Lab #3

### **Module 6 – Is Your Model Awesome?**

- Model Evaluation
  - All Models Are Wrong, Some Useful
  - Multiple Interpretations of Accuracy
- Model Deviance
  - Calculating Model Deviance
  - Is the Deviance Significant?
  - How Excel Calculates Significance
  - A significant Example
- Did Adding Predictors Help?

- The Akaike information criterion (AIC)
  - Did Adding Predictors Improve the AIC?
- What's The Explanation?
  - How Good is Your Model's Explanation?
  - Using the likelihood ratio
- Evaluation Predictions
  - Accuracy
  - Sensitivity
  - Specificity
  - Evaluating Predictions in Excel
- Hands-on Lab #4

### **Module 7 – Interpreting Your Model**

- What Are the Odds?
  - Odds Are Not Probabilities
  - Learning Odds by Example
- Odds Ratios
  - The Strength of Association
  - Calculating Odds Ratios
  - Logistic Regression's Odds Ratio Shortcut
  - How Excel Calculates Odds Ratios
- Interpreting Your Model
  - It's All About Odds Ratios
  - Translating the Odds Ratios
- Hands-on Lab #5

### **Module 8 – Gotchas**

- Insufficient Data
- Incomplete Information
- Complete Separation

### **Module 9 – Additional Resources**