

Course Outline

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